



**Government of the Democratic Republic of Timor-Leste  
Ministry of Public Works, Transport and Communications**

Directorate General for Public Works  
National Directorate for Roads, Bridges and Flood Control



**Roads for Development Program (R4D)**

# **Impact Monitoring Report**

(First Year End-Line Survey)



October 2015



## FORWARD

Since 2012 the Ministry of Public Works, Transport and Communications (MPWTC) - through the National Directorate of Roads, Bridge and Flood Control (DRBFC) - is implementing the Roads for Development Program (R4D). R4D is designed as the leading program in the rural roads sector in Timor-Leste. The Program receives financial support from the Australian Government and technical assistance is provided by the International Labour Organization (ILO).

The development objective to which R4D contributes is that Women and Men in rural Timor-Leste are deriving social and economic benefits from improved road access. Impact Studies were undertaken to assess changes in people's livelihoods after the completion of R4D rehabilitation and maintenance works.

Survey tools used in the data collection included Community Snapshots, Local Business Activity Surveys and Transport Surveys. This report compares the livelihood situation before the roads were rehabilitated (Baseline data) with the situation 3-4 months after the rehabilitation works were completed (End-line data).

The report shows that already significant positive changes in the rural people's livelihood situation occurred a few months after the completion of the rehabilitation works. These changes include an increase in the availability and use of motorized transport, a decrease in people's travel times, an increase in the number of local businesses and improved access to socio-economic facilities and services.

The significant positive impact on the livelihood situation of the rural people of Timor-Leste from improved rural road access is a confirmation of the importance and relevance of R4D. As only 13% of the rural roads in Timor-Leste are in a good condition, and with 70% of Timor-Leste's population living in rural areas, it is very important for the development of the country that adequate funding is made available to accelerate the rehabilitation of rural roads and their subsequent maintenance.



Rui Hernani Freitas Guterres,  
Director  
National Directorate of Roads, Bridges and Flood Control  
Ministry of Public Works, Transport and Communications

# TABLE OF CONTENTS

<b>FORWORD</b> .....	<b>I</b>
<b>LIST OF ABBREVIATIONS AND ACRONYMS</b> .....	<b>IV</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>VII</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
1.1 Objective of R4D .....	1
1.2 Purpose of the Impact Studies .....	2
1.3 Organization and Timing of the Baseline and End-line Surveys .....	3
<b>2. SURVEY METHODOLOGY AND INSTRUMENTS</b> .....	<b>4</b>
2.1 Introduction .....	4
2.2 Sampling Methodology .....	4
2.3 Data Collection .....	6
2.4 Data Processing .....	7
2.5 Data Validation .....	7
2.6 Survey Limitations .....	8
<b>3. SURVEY FINDINGS</b> .....	<b>9</b>
3.1 Changes in travel times and travel speeds .....	9
3.2 Changes in main sources of income .....	10
3.3 Changes in socio-economic constraints .....	10
3.4 Agricultural changes .....	12
3.5 Positive and negative effects from improved road accessibility .....	12
3.6 Changes in Year-round motorable access .....	15
3.7 Changes in travel times for the transportation of people, goods and services .....	18
3.8 Changes in cost of transportation for people, goods and services .....	19
3.9 Changes in volumes of traffic for the movements of people, goods and services .....	20
3.9.1 Total volumes of traffic .....	20
3.9.2 Total number of Passenger Car Units per road .....	22
3.10 Changes in availability and use of economic assets/services by local communities .....	23
3.10.1 Travel frequencies to main socio-economic services .....	23
3.10.2 Access to public transport facilities .....	24
3.11 Impact on local economic businesses activities .....	26
3.11.1 Creation of new businesses within sampled Sucos along R4D roads .....	27
3.11.2 Types of businesses .....	27
3.11.3 Changes in types of products and prices of commodities .....	29
3.11.4 Business turn-over .....	29
3.11.5 Changes in numbers of customers to local businesses .....	30
3.11.6 Changes in number of staff employed by local businesses .....	31

3.12 Prices of main commodities .....	31
<b>4. RECOMMENDATIONS</b> .....	<b>33</b>
<b>ANNEXES</b> .....	<b>34</b>
Annex 1: Survey locations for Community Snapshots and LBA Survey .....	34
Annex 2: Sketches for Transport Survey locations.....	35
Annex 3: Aldeia Community Snapshots Questionnaire.....	40
Annex 4: Local Business Activity Survey Questionnaire.....	50
Annex 5: Transport Survey Template .....	52
Annex 6A: Main benefits experienced from improved road access by District – Women FGDs ....	54
Annex 6B: Main benefits experienced from improved road access by District – Men FGDs .....	55
Annex 7a: Changes in Income from Agricultural Production (USD) – Women FGDs.....	56
Annex 7b: Changes in Income from Agricultural Production (USD) – Men FGDs .....	56
Annex 8a: Other Benefits Experienced by Men from Road Improvements .....	58
Annex 8b: Other Benefits Experienced by Women from Road Improvements.....	59

## LIST OF ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AusAid	Australian Aid Agency
CDO	Community Development Officer
FEA	Field Engineering Assistant
FGDs	Focus Group Discussions
LBAS	Local Business Activity Survey
IADE	Instituto de Apoio ao Desenvolvimento Emprezarial
ILO	International Labour Organization
GoTL	Government of Timor-Leste
MoI	Ministry of Infrastructure
MPWTC	Ministry of Public Works, Transport and Communications
NDRBFC	National Directorate of Roads, Bridges and Flood Control
ODI	Overseas Development Institute
PCU	Passenger Car Unit
R4D	Roads for Development
REs	Regional Engineers
UNDP	United Nations Development Program

# LIST OF FIGURES, TABLES AND PHOTOGRAPHS

## List of Figures

Figure 1: Summary of Survey Locations for Year I End-line Surveys .....	5
Figure 2: Changes in Most Important Socio-economic Constraints after Road Improvement for Women .....	11
Figure 3: Changes in Most Important Socio-economic Constraints after Road Improvement for Men .....	11
Figure 4: Major Reported Negative Effects .....	15
Figure 5: Change in Motorized Transport to Selected Socio-economic Facilities – Women Responses .....	17
Figure 6: Change in Motorized Transport to Selected Socio-economic Facilities – Men Responses.....	18
Figure 7: Aggregated Travel Volume .....	21
Figure 8: Changes in Volume of Traffic on Maliana-Saburai Road (exc. Pedestrian and Motorbikes) .....	21
Figure 9: Average Walking Times to Nearest Transport Facility .....	25
Figure 10: Newly Established Businesses Across the Surveyed Roads .....	27
Figure 11: Profile of Surveyed Local Businesses along R4D roads (as % of all Businesses) .....	28
Figure 12: Change in Type of Products Sold/Provided .....	29
Figure 13: Average Weekly Turn-over in USD for Kiosks .....	30
Figure 14: Changes in the Number of Customers after Road Rehabilitation.....	30

## List of Tables

Table 1: R4D Physical Works Progress as of 30 <sup>th</sup> August 2015 .....	1
Table 2: Profile summary of the sampled roads .....	9
Table 3: Increase in Weekly Income from Marketing Agricultural Products.....	12
Table 4: Experienced Main Benefits Reported by Men from Improved Rural Road Access .....	13
Table 5: Experienced Main Benefits Reported by Women from Improved Rural Road Access.....	13
Table 6: Year-round Road Accessibility before and after R4D Road Rehabilitation Works .....	16
Table 7: Changes in Main Mode of Transport.....	17
Table 8: Reduction in Travel Times to Selected Socio-Economic Services and Facilities.....	19
Table 9: Reduction in Travel Costs for Renting Angunnas, Trucks or Mikrolets .....	19
Table 10: Comparison of PCUs and Average Speed between Baseline and End-line Situation .....	23
Table 11: Change in Availability of Public Transport to Markets and Municipal Capitals.....	26
Table 12: Change in prices of main commodities .....	31

## List of Photographs

Photo 1: Conducting Community Snapshots End-line Survey, Baucau Municipality .....	6
Photo 2: Examples of Different Pavement Types of Rehabilitated R4D Roads .....	10
Photo 3: Access to SISCA Services After Road's Rehabilitation in Suco Saburai, Bobonaro Municipality .....	14
Photo 4: Condition of the Boile-Uatabo Road, before and after the Road Rehabilitation .....	15
Photo 5: Use of Hand-Carts Along R4D Rehabilitated Road .....	24
Photo 6: Examples of Newly Established Businesses created .....	28
Photo 7: New Constructions with Increased Availability and Reduced Cost of Construction Materials .....	32



## EXECUTIVE SUMMARY

Impact Studies are undertaken to assess changes in people's livelihoods after the completion of R4D rehabilitation and maintenance works. The impact studies collect information on different socio-economic dimensions to assess the overall impact of R4D towards its development objective. The survey tools that were used are **Community Snapshots**<sup>1</sup>, **Local Business Activity Surveys** and **Transport Surveys**.

The collection of baseline survey data on the 2013-2014 rehabilitated and maintained R4D roads was done in June-August 2013, before the start of the works. First year End-line Surveys were planned 3-4 months after the completion of the construction works to allow for initial effects/impacts to materialize. As most of the 2013/2014 works were completed in September 2014, data collection for the End-line Survey was done from January to April 2015. Second year End-line Surveys on the completed 2013/2014 R4D works are planned for June 2016.

The impact studies compare data collected during the End-line Surveys with the information gathered during the Baseline Surveys. Aldeias from 26 Sucos were included in the data collection for the first-year End-line Survey. As most of the 2013/2014 maintenance activities were limited to selected periodic maintenance works, field observations carried out prior to the End-line Survey already indicated that there was very limited impact from these works. Therefore, only two maintenance roads were included in the End-line Survey where significant improvements to the road were observed. Sex-disaggregated data have been collected as well to assess differences impact between men and women.

Overall, results from the Impact Study show that many positive changes have occurred even within a limited period after the completion of the road works. However, more time is required for significant impacts to materialize, particularly because of the still low accessibility and affordability of public transport facilities. This is a constraint in achieving maximum socio-economic development benefits from an improved condition of the roads. The main findings from the Impact Surveys are summarized below.

### **Changes in travel times, volumes of traffic, modes of transportation and access to transport**

- i. There has been an overall **increase** of **almost 200 %** in the volume of traffic along the sample roads for all the vehicle categories - with the excluding of pedestrian traffic. Pedestrians and motorbikes (including ojeks<sup>2</sup>) remain to generate the large majority of the traffic (95%, of which 65 % by motorbikes and 30 % by pedestrians) after the completion of the rehabilitation of the roads.
- ii. The **overall travel times reduced with 50%** and the **possible driving speed increased with 33 %** along the R4D rehabilitated roads.
- iii. Improved rural road access has resulted in a **clear increase** in the use of **motorbikes, mikrolets** and **taxis** and a significant decrease in the percentage of people for whom walking is the main means of transport.
- iv. Facilities that are usually located in the vicinity, such as **health centers, water sources, agricultural land** and **primary schools**, are **still accessed by foot** in the majority of the cases.
- v. Disaggregated data show that walking has been replaced by other types of transport, such as taxis (ambulances), mikrolets and motorbikes to reach hospitals. Markets are more frequently accessed by motorbikes and mikrolets.
- vi. A comparison between changes in the use of motorized transport by men and women shows that there are no significant differences with the exception of the use of motorbikes (used by 6% of the women against 10% by the men).
- vii. **Increased access to transport facilities was mentioned** as the most significant benefit (reported by 62 % of men and women).

---

<sup>1</sup> *Men and Women Focus Group Discussions.*

<sup>2</sup> *Ojeks: Motorbike taxi Service.*

- viii. Men reported **improved access to markets** - through an increase in the availability of transport - as the second most important benefit (15 %), whereas women mentioned **improved access to ambulance services** as the second most important benefit (19 %). These results are in line with expectations emerging from the Baseline Survey results, where access to public transport facilities was ranked by women and men as the most significant expected benefit from improved road access. The availability of public **transport facilities** is therefore a **key enabling factor** to improve access to other socio-economic facilities such as markets and health services.
- ix. The lack of public transport facilities and - when available - their still relatively high costs, are major constraints for people to travel by motorized transport. Most people still continue to walk to reach main socio-economic facilities such as markets and health centers. For this reason, significant reductions in travel time of people have not materialized yet along most of the roads that were rehabilitated.
- x. At a number of roads however - where there has been a significant increase in the availability of public transport soon after the completion of the rehabilitation works – there have been substantial reductions and travel time savings – up to 5 hours.

#### **Agricultural benefits**

- xi. The rehabilitation of the roads has resulted in a larger percentage of people mentioning agriculture as their main sources of income (94% compared to 84% before the roads were rehabilitated). This could possibly be due to the fact that a larger number of people now see opportunities to sell (or sell more) agricultural products in the local markets.
- xii. Men and women reported an **average increase of 100% in weekly income** from the sales of agricultural products. Large variations were however reported by both men and women.
- xiii. No changes were yet observed in the use of the services of middlemen/agents for the marketing of products.

#### **Improved access to health care services and facilities**

- xiv. **24-ambulance service** has become available along most of the R4D rehabilitated roads and this would suggest that the frequency of visits with an ambulance to a hospital will increase.
- xv. With increased year-round road accessibility, **Mobile Health Services** can reach remote communities much easier and this results in a significant reduction of walking times for women to those child and maternal health care facilities.

#### **Increased availability of public transport**

- xvi. **After the roads were rehabilitated**, the average travel time to transport facilities has been reduced to **23 minutes, i.e. a reduction of 74 %** in walking time.

#### **Decrease in transportation costs**

- xvii. Most of the roads were not passable for motorized traffic before the start of the rehabilitation works and a comparison of motorized transportation costs between the ‘before’ and ‘after’ situation could therefore not be made for most of the roads. For those few roads where motorized traffic was possible before the completion of the rehabilitation works, **no reduction in the costs of transportation were reported yet.**
- xviii. A **reduction in the cost of renting transport such as Angunnas, Trucks and Mikrolets** for transporting building materials and agricultural products to the market. Particularly the cost of renting Mikrolets has significantly decreased.

#### **Increase in local business activities**

- xix. **Almost 30 %** of the business along the rehabilitated roads were **new businesses**<sup>3</sup>.
- xx. The largest category of businesses are **local shops like kiosks (77 %)**, followed by **local construction companies (8 %)** and **agricultural products shops (6 %)**.

---

<sup>3</sup> In Oecusse, all businesses along the roads are newly established businesses.

- xxi. **Local shops** are the **most frequently established new types of** businesses that were established once increased access to transport became available. In some cases, labourers who worked on R4D construction works used part of their R4D earnings to open a new kiosk.
- xxii. **45 %** of the respondents reported an **increase in types of commodities** they are selling since the improvements in road conditions. Some commodities such as rice, fuel and construction materials, in the past only carried on the shoulders can now be transported by motorized transports.
- xxiii. **Local Kiosks** reported an **increase in weekly turn-over of 40 %**.
- xxiv. **27% of the businesses experienced an increase in the number of customers** after the completion of the rehabilitation works and 13% of the businesses noted a decrease in the numbers of their customers, because of growing competition.
- xxv. Due to the improved road access and transport facilities, **prices** of local construction materials like **sand** have **decreased** substantially (more than 20% decrease). Other bulk commodity for which the prices declined significantly are **rice** (6-13% decrease in price) and **cement** (7-9% decrease in price). The decrease in the prices of construction materials, due to reduction in transportation costs and their increased availability in local shops, has also resulted in **an increase of the construction of concrete houses and buildings**.

#### **Negative effects**

- i. The most significant negative effect from improved road access that was reported was an **increase in pollution**, in particularly air pollution (52%). The second most important reported negative impact was an **increase in the number of accidents** (35 % of the responses).

\*\*\*



# 1. INTRODUCTION

## 1.1 Objective of R4D

R4D is the leading rural roads program in Timor-Leste. R4D commenced in March 2012 and is implemented by the Ministry of Public Works, Transport and Communications (MPWTC) through the National Directorate of Roads, Bridges and Flood Control (NDRBFC). R4D receives technical assistance from the International Labour Organization (ILO) and financial support from the Australian Government. The current first phase of R4D is coming to an end in December 2016.

The development goal of R4D is that women and men in rural Timor-Leste are deriving social and economic benefits from improved road access. R4D combines direct investments in rural roads with technical support and capacity building of MPWTC in budgeting, planning and management of rural roads investments. R4D' immediate objectives also include building capacities of the local civil works contractors that are contracted for the execution of the works.

The overall physical progress of the 2013/2014 and 2014/2015 rehabilitation and maintenance works as of 30<sup>th</sup> August 2015 is summarized in table 1.

**Table 1: R4D Physical Works Progress as of 30th August 2015<sup>4</sup>**

<b>Works</b>	<b>Kilometers</b>	<b>No. of roads</b>	<b>No. of contract packages</b>
2013/2014 Rehabilitation Works	94	15	42
2013/2014 Maintenance Works	145	23	26
<b>Total 2013/2014 Works</b>	<b>239</b>	<b>38</b>	<b>68</b>
2014/2015 Rehabilitation Works	10	2	2
2014/2015 Maintenance Works	230	33	13
<b>Total 2014/2015 Works</b>	<b>240</b>	<b>35</b>	<b>15</b>
Total All Rehabilitation Works	103	17	44
Total All Maintenance Works	238	38	39
<b>Total All Works</b>	<b>248</b>	<b>38</b>	<b>83</b>

There has been a reduction in kilometers of roads rehabilitated and maintained from the envisaged physical targets contained in the Project Document<sup>5</sup>. This is due to two main reasons: i) higher costs for rehabilitation than originally planned; ii) a substantial reduction in Government funding compared to the USD 20 million Government contribution mentioned in the Project Document. The total Government contribution for the 2013/2014 and 2014/2015 construction seasons was USD 4.2 million only. For the 2015/2016 construction season the Government has allocated USD 5.1 million for R4D's capital investments and cover the rehabilitation of 23 kilometers of rehabilitation and 374 kilometers of maintenance.

Improved access to rural roads is largely recognized as a key determinant for the socio-economic development of rural areas. Impact evaluation studies of rural roads projects in Timor-Leste and

<sup>4</sup> R4D Six-monthly progress report July-December 2014

<sup>5</sup> As per the R4D Project Document the original physical targets of R4D were:

- 40 kilometers of new rural roads construction
- 450 kilometers of rural roads rehabilitation
- 1,150 kilometers of rural roads maintenance

elsewhere<sup>6</sup> indicate that there is a wide range of benefits to rural people through improved access to roads<sup>7</sup>. These include reduced travel times, increased access to services such as schools and health centers, increased agricultural productivity, improved access to markets, and an increase in local economic activities and employment opportunities<sup>8</sup>.

Rural road infrastructure and transport development can play a critical role in developing the local economy. To move from subsistence agriculture to marketing, year-round motorized access to roads and the availability of transport are essential requirements to agricultural development and to link farmers to market-related services, particularly markets and agricultural inputs<sup>9</sup>.

Results from the baseline survey conducted by R4D in 2013 show that people in rural areas spent one-third of their productive time to travel to services and facilities. With improved road access and reduced travel times, the time saved in traveling can be used for productive activities.

## 1.2 Purpose of the Impact Studies

Impact Studies were undertaken to assess changes in people's livelihoods after the completion of R4D rehabilitation and maintenance works. The impact studies collect information on different socio-economic dimensions to assess the overall impact of R4D towards its development objective. Survey tools used are: i) **Community Snapshots**, ii) **Local Business Activity Surveys**, and; iii) **Transport Surveys**.

The impact studies compare data collected during the End-line Surveys with the information gathered during the Baseline Surveys. Sex-disaggregated data have been collected as well to assess differences impact between men and women.

The **key performance indicators** and their first year targets in the R4D Results Framework that are addressed by the impact study are:

- A. # road users who have access to improved year-round motorable access to rural roads;
- B. 35% reduction in travel times for the transportation of people, goods and services to economic and social facilities and services along R4D improved roads;
- C. 10 % reduction in transportation costs for the transportation of people, goods and services along R4D improved roads;
- D. 10 % increase in the volume of movement of people, goods and services along R4D improved roads;
- E. 10 % increase in the availability/use of economic assets/services and social facilities/services by local communities using R4D improved roads;
- F. 5 % increase in local economic businesses in terms of establishment of new businesses and increase in turn-over of existing businesses along R4D improved roads.

The Community Snapshots aim to evaluate changes in relation to key performance indicators A and E. The Local Business Activity (LBA) Surveys aims at measuring changes for local businesses located along the R4D rehabilitated roads, in particular in terms of the impact on the level of turn-over of existing businesses and the establishment of new businesses (indicator F). The Transport Surveys measure changes over time in traffic volumes of people and goods (indicators A and D).

---

<sup>6</sup> ILO TIM Works Project, Timor-Leste (ILO, 2011); UNDP-ILO project: Capacity Building for Local Resource-Based Road Works in Selected Districts in Aceh and Nias – Indonesia (UNDP/ILO, 2010); Background Note Overseas Development Institute (ODI) “Achieving Pro-Poor Growth through Investments in Rural Feeder Roads: the Role of Impact and Evaluation” (ODI, 2011); “Community Access Program (CAP): Post-Construction Benefits Monitoring & Evaluation” (UNOPS, 2009).

<sup>7</sup> R4D Project Document, 2012

<sup>8</sup> Ibid

<sup>9</sup> ILO EIIP: Rural Transport and Accessibility

### **1.3 Organization and Timing of the Baseline and End-line Surveys**

The collection of baseline survey data on the 2013-2014 R4D works was done in June-August 2013, before the start of the works. First year End-line Surveys were planned 3-4 months after the completion of the construction works to allow for initial effects/impacts to materialize. As most of the 2013/2014 works were completed in September 2014, data collection for the End-line Survey was done from January to April 2015. Second year End-line Surveys on the completed 2013/2014 R4D works are planned for June 2016.

## 2. SURVEY METHODOLOGY AND INSTRUMENTS

### 2.1 Introduction

Baseline data had been collected at Aldeia level along all 12 R4D roads that were rehabilitated (91 kilometers) and along half of the 24 R4D roads that were maintained (145 kilometers) during the 2013/2014 construction season. Baseline data collection was undertaken in Aldeias of 38 Sucos located along the 2013/2014 rehabilitated and maintained R4D roads (covering 7 Municipalities).

Because of delays in the completion of 2013/2014 rehabilitation works along 2 roads<sup>10</sup>, these 2 roads were excluded from the first-year End-line Survey. As most of the 2013/2014 maintenance activities were limited to selected periodic maintenance works, field observations carried out prior to the End-line Survey already indicated that there was very limited impact from these works on the livelihoods of the people. For this reason only two maintenance roads were included in the End-line Survey where significant improvements to the road were observed<sup>11</sup>. Aldeias from 26 Sucos were included in the data collection for the first-year End-line Survey.

As R4D's limited 2014/2015 and 2015/2016 rehabilitation works mainly focused on the rehabilitation of additional sections of roads that were rehabilitated in 2013/2014, no Baseline Surveys for the 2014/2015 road works were scheduled.

### 2.2 Sampling Methodology

Annex 1 presents the list of sampled R4D rehabilitation and maintenance roads that have been included in the Year I End-line Survey.

The methodology for the selection of Sucos, Aldeias and survey sites for the first year end-line survey was the same as applied for the baseline survey. **Community Snapshots** were conducted at **Aldeia level** (one Aldeia per Suco was selected) and **Local Business Activity Survey** were conducted at **Suco level**. End-line surveys took place in the same Aldeias and Sucos that were sampled during the baseline surveys. The Aldeias' location and population density were the two main criteria for sampling:

- For go-through roads, the Aldeia in the Suco with the largest population located most closely to the half-way point of the road was selected;
- For dead-end roads, the Aldeia with the largest population located furthest away from the road was selected.

End-line survey data for the **Transport Survey** were collected at one or two locations, depending on the length of the road. The selected locations were the same as those used during the baseline survey. Generally, for go-through roads and dead-end roads of more than 5 kilometers length, traffic surveys were undertaken at two locations: one location at approximately halfway the first half of the road and one location about halfway the second half of the total road length.

In case of roads of less than 5 kms length without road junctions along the road, the traffic survey for go-through and dead-end roads was undertaken at one location – away from populated areas to avoid undue double counting of very localized traffic. Exceptions have been made for the Baqui - Oelulan road and the Oelulan - Leolbatan road in Oecussi. These two road links are part of the same road, with a total length of 15.5 kms. Oelulan is the connecting point between the two road links and a total of 3 survey sites were selected: one close to Baqui, one near Oelulan and the third one close to Leolbatan Annex 2 contains the sketches showing the locations and GPS coordinates of the site where traffic surveys were undertaken. Figure 1 shows a summary of the survey locations for the End-line Surveys.

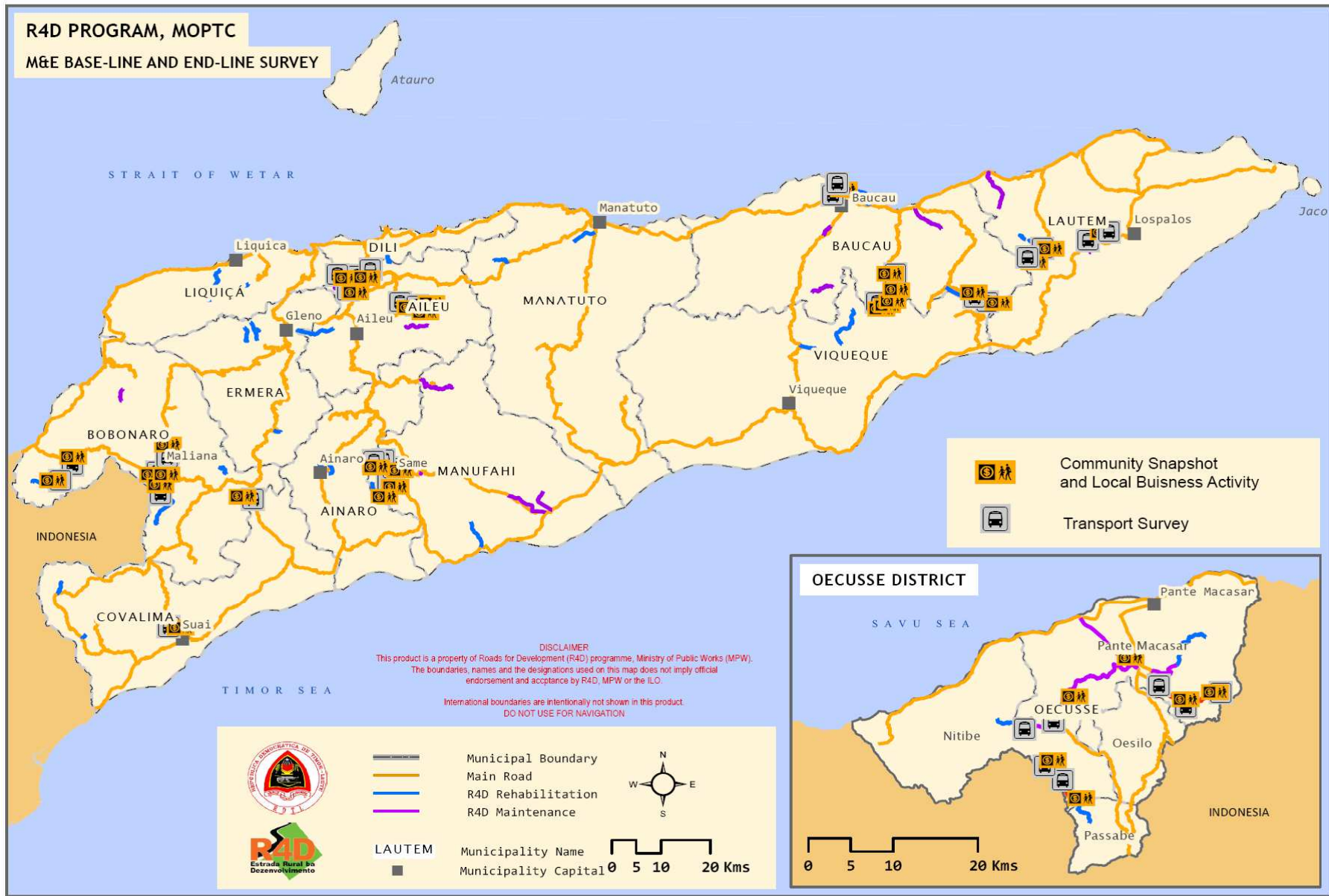
---

<sup>10</sup> Same-Rotuto road (3 kilometers) and Lianai-Grotu road (6,3 kilometers) in Manufahi Municipality.

<sup>11</sup> Maumeta-Fadabloco road in Aileu Municipality and Nunhenu-Oelkaem in Oecusse.



Figure 1: Summary of Survey Locations for Year I End-line Surveys



## 2.3 Data Collection

Similarly to the baseline data collection process, 5 Community Development Specialists (CDOs) were deployed for the data collection in 7 Municipalities. The MPWTC R4D Social Safeguards and M&E Coordinator and the ILO R4D M&E Officer were responsible for supervision and quality control. The data collection was completed between January and April 2015.

Data for the Community Snapshots were collected through sex-disaggregated Focus Group Discussions (FGDs) whereas data for the Local Business Activity (LBA) Survey were gathered through individual interviews with local business owners.

**Photo 1: Conducting Community Snapshot End-line Survey, Baucau Municipality**



FGDs were formed by people of different age groups (18-29, 30-45, 46+) and types of employment – for instance regularly employed people (teachers, business owners etc.), farmers and unemployed people. The CDOs discussed with the Aldeia Chief the group formation and the Aldeia Chief was responsible for community mobilization. The average number of group participants has been 9 for men and 7 for women. If less than 3 people came to participate in a FGD, the FGD was rescheduled to a later date. During the survey a **total number of 417 people** were interviewed through the FGDs, **231 men** and **186 women**.

Per type of business, structured interviews were held with owners of businesses located along the R4D roads. A total of **195 business owners** was interviewed. Community Snapshots and LBA surveys were conducted in **26 Aldeias/Sucos**. Annex 4 presents the questionnaire that was used for the LBA surveys.

Questionnaires used for the FGDs and individual interviews with business owners were essentially the same as those used in the Baseline Surveys. Some additional questions were added to enable capturing the changes before and after the completion of the construction works, including questions about **agricultural revenues** and **prices of selected products**. The questionnaire used for the Community Snapshots is presented in Annex 3.

The LBA Survey aimed to assess the impact from improved rural road access on businesses within Sucos located along the R4D roads, in particular in terms of the creation of new businesses and the impact on existing businesses regarding **turn-over, numbers of costumers, types of products sold** and **numbers of people employed** by the businesses.

Before the start of the data collection, the CDOs received one day classroom training by the ILO R4D M&E Officer. During the classroom training, the results of the Baseline Survey conducted in 2013 were presented and the

questionnaire with the modifications was reviewed. A one day practical training, where CDOs were trained on FGDs techniques, complemented the classroom training.

On-the-job training to CDOs and oversight of the data collection were provided by the ILO R4D M&E Officer and by the Social Safeguards/M&E Coordinator during the initial phases of the field work. Further supervision and oversight visits were undertaken until the end of the field work phase. The CDOs were responsible for checking the quality and completion of the questionnaires and for submitting the completed forms to the ILO R4D M&E Officer. As much as possible data inconsistencies and data gaps have been corrected in the field by returning to the survey site and asking for additional information.

The Transport Survey included data collection on the volume of traffic on R4D rehabilitated and maintained roads. The survey template (see Annex 5) was revised to facilitate the collection of data and the data-entry process. Whereas during the Baseline Survey paper forms were used, for the end-line survey tablets were used for the traffic counts to facilitate data entry and processing. The ILO R4D IT and Database Specialist trained the ILO R4D Regional and Training Engineers in the use of the tablets' application. Temporarily hired local enumerators were trained by the R4D Regional Engineers to collect the traffic count data on the selected sites. The use of tablets had considerably facilitated the entry of the traffic survey data.

The transport survey was supervised by R4D Training Engineers and MPWTC supervisors, and was coordinated by R4D Regional Engineers (REs). The enumerators were selected by the CDOs and REs among men and women in the community who had a minimum education level (high school). Training Engineers and MPWTC supervisors were responsible for the day to day supervisions, and for checking that the data had been saved on the tablet at the end of the day. The survey was conducted over period of 7 consecutive days, from 6 am to 7 pm.

## 2.4 Data Processing

For the data processing of the collected data of the Community Snapshots and LBA survey, the same open source survey system of the Baseline Surveys was used<sup>12</sup>.

The data were entered by the national ILO R4D Database Officer in the data storage system. The stored data were exported in an MS Excel spreadsheet, systematized and aggregated to allow for data analysis. Data were ordered and analyzed per question and cross-checked for data inconsistencies. The data of the Transport Survey were extracted from the Tablet Application and transferred on MS Excel spreadsheets for data analysis.

## 2.5 Data Validation

During data collection, data processing and data analysis, the following data validation methods were used to check the reliability and consistency of the data:

- i. Cross-checking of information from the local community with knowledge of the CDOs;
- ii. Cross-checking of information obtained during the FGDs with secondary data sources (where available);
- iii. Triangulation of the information provided by male FGDs participants with information provided by female FGDs participants from the same Aldeia;
- iv. Frequent supervision visits from the M&E Officer and CDO coordinator during data collection;
- v. R4D Training Engineers and CDOs were responsible for the daily supervision of the temporary hired enumerators for the transport surveys. In case of data inconsistencies and mistakes, the survey has been repeated;

---

<sup>12</sup> *Limes Survey*: [www.limesurvey.org](http://www.limesurvey.org).

- vi. Overall control of data quality and consistency during the data entry process, data processing and analysis by the M&E Officer.

## **2.6 Survey Limitations**

In some cases substantial differences in answers were noted from FGD members within one Aldeia regarding travel times, in particular when the FGD members' households were located far apart. In addition, the perception of time among community members is approximate and not always accurate. The survey has tried to address these issues by inviting the same FGD members for the Baseline and End-line Surveys and by averaging information about travel times. Nevertheless, the results of changes in travel time can only be considered as indicative.

Gathering primary information about the exact number of new businesses was not feasible; this information was collected through the Aldeia and/or Suco Chief and cross-checked as much as possible with information from R4D staff. The survey findings regarding the number of identified new businesses are therefore indicative. A lack of record keeping by business owners was also observed in some cases and this means that the figures presented in this report regarding changes in business turn-over need to be seen as indicative.

## 3. SURVEY FINDINGS

### 3.1 Changes in travel times and travel speeds

Table 2 shows the difference in travel times and travel speeds between the ‘before’ and ‘after’ gives a summary of the sample roads with Baseline and Year I End-line information, including information about differences in travel times and travel speeds before and after the roads were rehabilitated. As can be seen in table 2, **overall travel times reduced with 50%** and the **possible driving speed increased with 33 %**.

**Table 2: Profile summary of the sampled roads**

No	District	Sub-District	Road Name	Type of Works*	Road Length (km)	No. of Sucos along Road	No. of Beneficiaries living along the Road		One Way Travel Time along the Road from Start to End Point with 4WD Vehicle (minutes)			Possible Average Driving Speed along the Road with 4WD Vehicle (km/hour)		
							HH	People	Base-line	End-line	Differ-ence	Base-line	End-line	Differ-ence
1	<i>Baucau</i>	<i>Baucau-Villa</i>	<i>Boile-Uatabo</i>	R	5.2	2	1911	9719	0:43	00:17	<b>00:26</b>	17.5	27.0	<b>9.5</b>
2	<i>Aileu</i>	<i>Remexio</i>	<i>Maumeta-Fadabloco</i>	M	4.2	4	1062	5677	0:40	00:16	<b>00:24</b>	20.0	25.0	<b>5</b>
3	<i>Aileu</i>	<i>Laulara</i>	<i>Laulara-Ornai</i>	R	5.5	2	864	4443	0:20	00:12	<b>00:08</b>	20.0	25.0	<b>5</b>
4	<i>Baucau</i>	<i>Baguia</i>	<i>Baguia-Larisula</i>	R	8.0	2	609	2547	0:37	0:32	<b>00:05</b>	17.5	28.0	<b>10.5</b>
5	<i>Bobonaro</i>	<i>Balibo</i>	<i>Balibo-Cowa</i>	R	10.0	2	1423	6561	1:00	00:21	<b>00:39</b>	25.0	30.0	<b>5</b>
6	<i>Bobonaro</i>	<i>Maliana</i>	<i>Maliana-Saburai</i>	R	11.0	3	2560	12120	0:55	00:23	<b>00:32</b>	25.0	30.0	<b>5</b>
7	<i>Covalima</i>	<i>Suai</i>	<i>Looqeu</i>	R	3.0	1	1814	11444	0:45	00:07	<b>00:38</b>	25.0	30.0	<b>5</b>
8	<i>Lautem</i>	<i>Luro</i>	<i>Luro-Barikafa</i>	R	7.0	2	894	3920	0:27	0:25	<b>00:02</b>	13.3	26.0	<b>12.7</b>
9	<i>Oecusse</i>	<i>Pante Macassar</i>	<i>Baqui-Oelulan-Leolbatan</i>	R	15.5	2	4136	15640	1:20	00:40	<b>00:40</b>	20.0	30.0	<b>10</b>
10	<i>Oecusse</i>	<i>Nitibe</i>	<i>Mahata-Cusi</i>	R	9.0	2	1223	5358	0:35	00:22	<b>00:13</b>	20.0	30.0	<b>10</b>
11	<i>Oecusse</i>	<i>Pante Macassar</i>	<i>Nunuhenu-Oelkaem</i>	M	14.6	2	2569	10690	0:40	00:38	<b>00:02</b>	25.0	25.0	<b>0</b>
<b>Average Rehabilitation</b>									00:43	00:23	<b>00:20</b>	20.8	27.8	<b>7</b>
<b>Average Maintenance</b>									00:40	00:27	<b>00:13</b>	22.5	25	<b>2.5</b>

\*R=Rehabilitation; M=Maintenance



All the roads rehabilitated by R4D are now year-round accessible by motorized transport. Depending on the road's gradient and the annual rainfall, R4D has used different types of surfacing such as plum concrete, Penetration Macadam (Penmac) or gravel.

**Photo 2: Examples of Different Pavement Types of Rehabilitated R4D Roads**



*Plum Concrete Surfacing, Boile-Uatabo*



*Plum Concrete Surfacing, Mahata-Kusi*



*Gravel Surfacing, Lookeu*



*Penetration Macadam Surfacing, Maliana-Saburai*

### 3.2 Changes in main sources of income

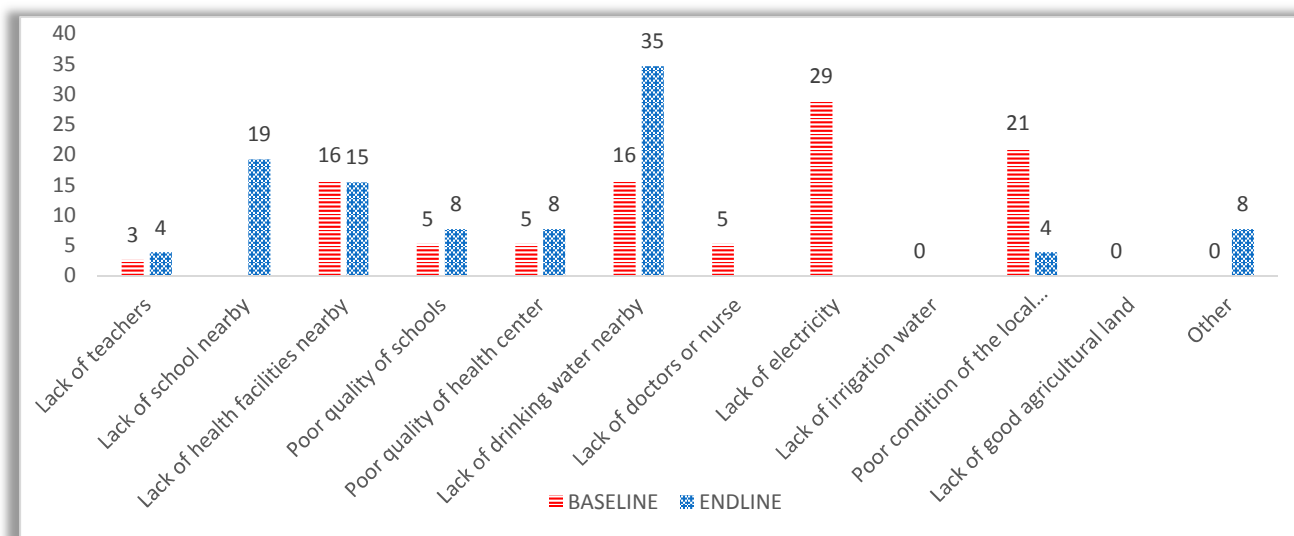
The rehabilitation of the road has resulted in a larger percentage of people mentioning agriculture as their main sources of income (94%) than was the case before the road was rehabilitated (84%). This could possibly be due to the fact that a larger number of people now see opportunities to sell (or sell more) agricultural products in the local markets.

Data also show a slight increase in the percentage of responses that ranked local businesses as main source of income (1.9 % increase), that could be due to the new businesses established after the rehabilitation of R4D roads.

### 3.3 Changes in socio-economic constraints

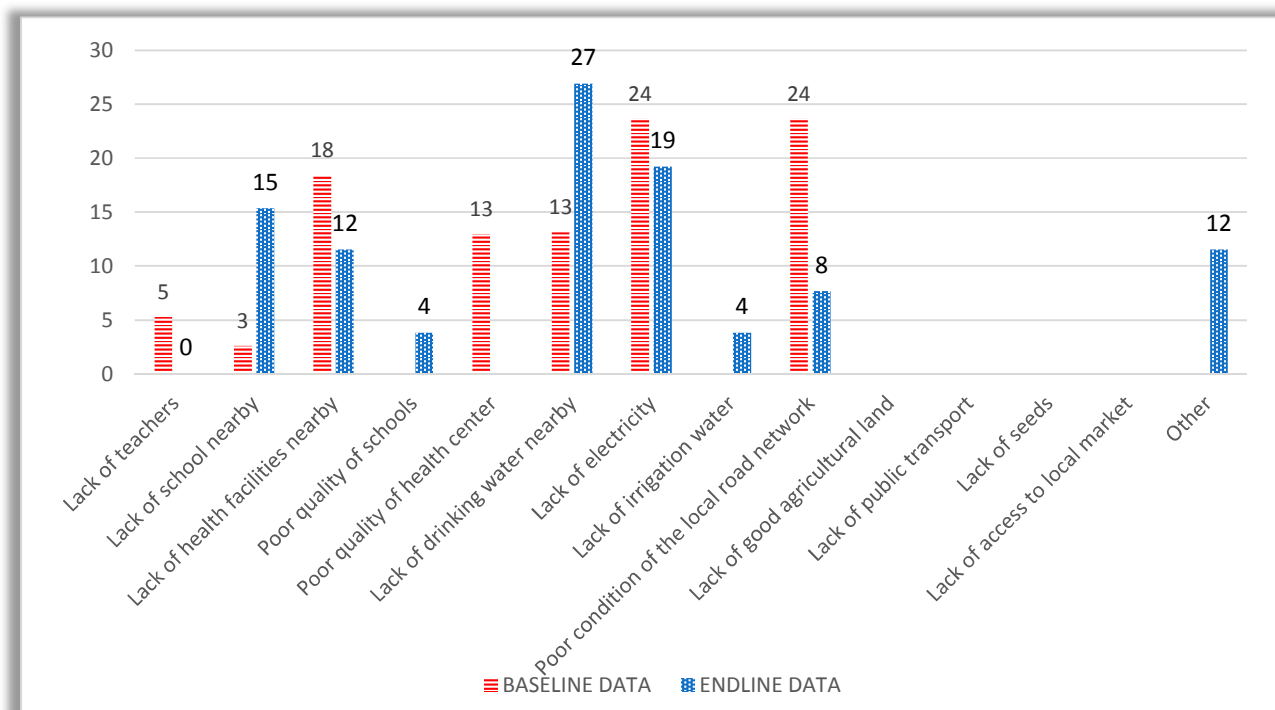
Figure 2 and 3 present the changes regarding main socio-economic constraints since the completion of the rehabilitation works as mentioned respectively by women and men. As shown in figure 2 **women** reported that the **lack of nearby drinking water** and the **lack of access to good quality educational and health facilities** remain main constraints. Figure 2 shows also that since the road was rehabilitated, poor road access is not considered a main constraint anymore.

**Figure 2: Changes in Most Important Socio-economic Constraints after Road Improvement for Women**



**From men' responses, a lack of water** – drinking water and irrigation water – is ranked as the main constraint (**31 %**) followed by a **lack of access to education (19 %)** and **electricity<sup>13</sup> (19 %)**. Compared to the results of the Baseline Survey, a lack of electricity is still ranked as one of the main constraints but with a lower percentage. The poor road condition which was ranked as a main constraint before the road construction works (24 %) is no longer considered by the men as a core problem

**Figure 3: Changes in Most Important Socio-economic Constraints after Road Improvement for Men**



<sup>13</sup> For both men and women, adequate health facilities includes the quality of the health centers, lack of health facilities nearby and the lack of doctors or nurse. Education includes lack of teachers and lack of schools nearby, and quality of schools.

### 3.4 Agricultural changes

Agricultural and infrastructure development are strongly correlated. The importance of good rural roads access to foster agricultural development is widely acknowledged and many countries have invested heavily in rural roads infrastructure, recognizing the significant positive effects that roads have on agricultural development.

The majority of the respondents involved in agriculture in the sample Aldeias are **subsistence farmers**. Lack of transport infrastructure, storage facilities and high transportation costs are among the main reasons why farmers usually access markets only by foot. Those factors added to the low fertility of land, lack of water for irrigation and difficult access to inputs such as seeds and fertilizers, lead to low agricultural output quantities and a slow pace of agricultural development.

Improved roads' conditions after R4D road works are rapidly changing this situation and farmers start to have better access to output and input markets. A large number of the farmers interviewed through the FGDs reported a significant increase in income from the marketing of agricultural products. Table 3 shows that, overall, **men and women** reported an **average increase of 100% in weekly income** from the **sales of agricultural products**. Large variations were however reported in both men and women groups.

**Table 3: Increase in Weekly Income from Marketing Agricultural Products**

	<b>Average</b>	<b>Max</b>	<b>Min</b>
<b>Men</b>	+ 100 %	+ 525 %	+ 20 %
<b>Women</b>	+ 100 %	+ 900 %	+ 33 %

**Maximum increases in income** from agricultural production were reported by men in Suco Bahu, on the Boile-Uatabo road, Baucau Municipality. For women this was the case in the Sucos Luro and Baricafa, along the Luro-Baricafa road in Baucau Municipality. Annex 7a and 7b contain sex-disaggregated data per road on the increase in income from agricultural production before and after the completion of the road rehabilitation works.

No changes were reported regarding the use of the services of middlemen/agents for the marketing of products.

### 3.5 Positive and negative effects from improved road accessibility

As shown in tables 4 and 5, **increased access to transport facilities was mentioned** as the most significant benefit (reported by 62 % of both men and women FGDs). Men reported **improved access to markets** through an increase in the availability of transport as the second most important benefit (15 %), whereas women mentioned **improved access to ambulance services** as the second most important benefit (19 %).

When combining the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> ranked main benefits, table 6 shows that 87% of the men considered increased access to transport as a main benefit. This is followed by improved access to markets (71%) and access to ambulance services (50%).

For women the situation is similar, with 82% of the women considering increased access to transport among the three highest ranked benefits, followed by improved access to markets (74%) and better access to ambulance services (54%).

These results are in line with expectations from the Baseline Survey results, where **access to public transport facilities** was ranked by women and men as the most significant expected benefit from improved road access. The availability of public transport facilities is a key enabling factor to improve access to other socio-economic facilities such as markets and health services.



**Table 4: Experienced Main Benefits Reported by Men from Improved Rural Road Access**

Main Benefits	Rank 1 (%)	Rank 2 (%)	Rank 3 (%)	Total Rank 1+2+3 (%)
Increased access to Transport	62	8	17	87
Improved access to markets (transport)	15	31	25	71
Better access to agricultural fields (transport)	4	0	0	4
Increased employment opportunities with NGO and government	4	0	8	12
Access to ambulance service	4	38	8	50
Increased transport (transport of goods for kiosks)	0	0	4	4
Increased access to health services	4	8	0	12
Increased access to construction material	4	0	8	12
Increased access to electricity	0	0	4	4
Increased access to education	0	12	4	16
Increased security	0	0	4	4
Reduced travel costs	0	0	8	8
Reduced travel times	4	0	8	12
Increased number of businesses	0	4	0	4
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	

**Table 5: Experienced Main Benefits Reported by Women from Improved Rural Road Access**

Main Benefits	Rank 1 (%)	Rank 2 (%)	Rank 3 (%)	Total Rank 1+2+3 (%)
Increased access to Transport	62	0	20	82
Better access to markets (transport)	8	46	20	74
Better access to agricultural fields (transport)	0	0	0	0
Increased employment opportunities with NGO and government	4	0	8	12
Access to ambulance service	19	19	16	54
Increased transport (transport of goods for kiosks)	0	0	0	0
Increased access to health services	4	15	0	19
Increased access to construction material	0	4	8	12
Increased access to electricity	0	4	0	4
Increased access to education	4	4	8	16
Increased access to police service	0	0	0	0
Reduced travel costs	0	0	4	4
Reduced travel times	0	0	8	8
Price of construction materials is cheaper	0	0	4	4
Increased security	0	8	4	12
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Annex 6a and 6b contain sex-disaggregated results of the reported benefits from improved road access for men and women for each Municipality. There are no wide variations between Municipalities, and access to public transport facilities was reported in all cases as the most important benefit.

In **Bobonaro** and **Aileu** **improved access to markets** are also among the major experienced benefits mentioned by men, whereas women in **Oecusse** mentioned **improved access to ambulance** as the most significant benefit. Additional data from field observation and semi-structured discussions with the local community show that in some places better access to roads has meant improved access to health services such as the SISCa program<sup>14</sup>.

<sup>14</sup> SISCa: Integrated Community Health Services

Photo 3: Access to SISCA Services after Road Rehabilitation in Suco Saburai, Bobonaro Municipality



Apart from the main benefits, respondents were also asked what other **positive and negative changes** they had experienced from improved road access. Annex 8a and 8b show the responses of respectively men and women to this question. 96% of the men and 100% of the women mentioned the following other benefits:

- Reduced travel times
- Improved linkages to markets
- Year-round motorized access
- Increase in travel by local people
- Increase in local transportation of goods
- Increase in job opportunities
- Increased security measures

Areas where no positive impact was (yet) reported by the majority of the respondents are:

- Access to drinking water facilities
- Increase in access to agricultural inputs
- Increase in access to credit facilities.

The most significant negative effect from improved road access that was reported was an **increase in pollution**, in particularly air pollution (52%), as can be seen in figure 4. The second most important reported negative impact was an **increase in the number of accidents** (35 % of the responses<sup>15</sup>).

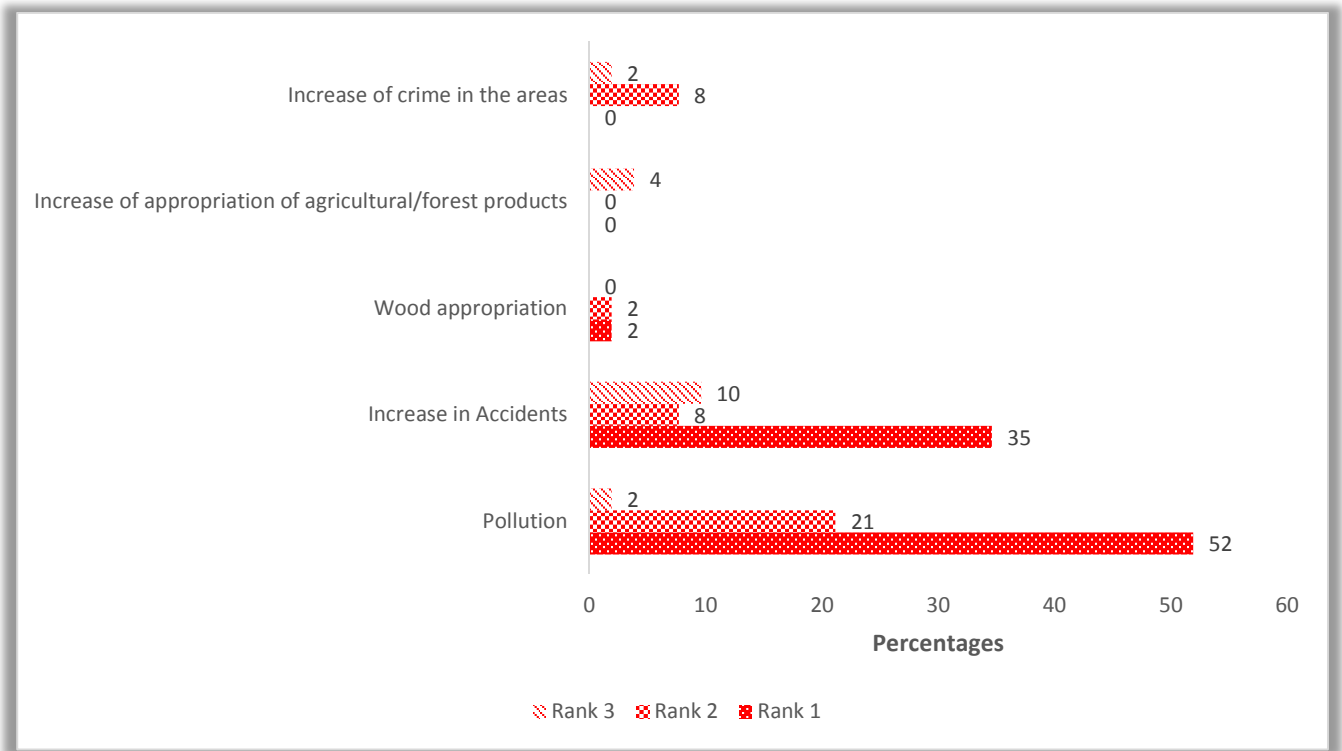
The increase in air pollution is happening mainly on roads with a gravel surface. With increased traffic and an increase in speed of the motorized traffic, dust pollution was reported as a problem along the road sections that pass through populated areas. Some women reported that this is a main problem particularly for children and elderly people. An increase in number of accidents that is expected, is due to the increased speed. Furthermore, some road sections are very steep and this might be a risk, particularly for motorbikes.

Those issues could be addressed by the use of different pavement types (in accordance with the recently drafted Rural Roads Standards), in combination with road sign warnings and the construction of speed-breakers.

---

<sup>15</sup> This figure does not mean that accidents did happen but rather that an increase of accidents might be expected.

**Figure 4: Major Reported Negative Effects**



### 3.6 Changes in year-round motorable access

Table 8 shows a comparison in road accessibility before and after the road rehabilitation works were undertaken. The information has been triangulated with data collected through the Community Snapshot FGDs with men and women and information from ILO-R4D Regional Engineers.

Most of the roads were accessible **only by foot before the start of the rehabilitation works**. Photo 4 shows an example of the road condition before and after the road rehabilitation works on the Boile-Uatabo road in Baucau Municipality.

**Photo 4: Condition of the Boile-Uatabo Road, before and after the Road Rehabilitation**



**Table 6: Year-round Road Accessibility before and after R4D Road Rehabilitation Works**

District	Suco	Road Name	Aldeia	Road Access Rainy Season		Road Access Dry Season	
				Before	After	Before	After
Aileu	Hautoho	Maumeta-Fadabloco	Lebutu	Car/Pick-ups/Motorbikes	All vehicles	All vehicles	All vehicles
Aileu	Fahisoi	Maumeta-Fadabloco	Mautoba	All vehicles	All vehicles	All vehicles	All vehicles
Aileu	Cotolau	Laulara-Ornai	Ornai	Only motorbikes	All vehicles	All vehicles	All vehicles
Dili	Dare	Laulara-Ornai	Sukalau	Only walking	All vehicles	Car/Pick-ups/Motorbikes	All vehicles
Aileu	Maumeta	Maumeta-Fadabloco	Tuqeu	Car/Pick-ups/Motorbikes	All vehicles	All vehicles	All vehicles
Aileu	Fadabloco	Maumeta-Fadabloco	Lilitei	Car/Pick-ups/Motorbikes	All vehicles	All vehicles	All vehicles
Bobonaro	Balibo Villa	Balibo-Cova	Fatuk LAran	Only motorbikes	All vehicles	All vehicles	All vehicles
Bobonaro	Cowa	Balibo-Cowa	Buai	Only motorbikes	All vehicles	All vehicles	All vehicles
Bobonaro	Holsa	Maliana-Saburai	Op-Legul	All vehicles	All vehicles	All vehicles	All vehicles
Bobonaro	Tapo Memo	Maliana-Saburai	Pin-Galak I	All vehicles	All vehicles	Car/Pick-ups/Motorbikes	All vehicles
Bobonaro	Saburai	Maliana-Saburai	Taz Masak	Only walking	All vehicles	Only walking	All vehicles
Covalima	Debos	Lookeu	Lookeu	Car/Pick-ups/Motorbikes	All vehicles	All vehicles	All vehicles
Covalima	Lepo	Lepo-Lour	Canua	Only walking	All vehicles	All vehicles	All vehicles
Oecusse	Bobocase	Bihala Noesusi	Bihala	All vehicles	All vehicles	All vehicles	All vehicles
Oecusse	Banafi	Mahata-Kusi	Hautefu (Kusi)	Only walking	All vehicles	Only walking	All vehicles
Oecusse	Taiboco	Nunhenu Oelkaem	Nemun	Only walking	All vehicles	All vehicles	All vehicles
Oecusse	Lelaufe	Mahata-Kusi	Mahata	Only walking	All vehicles	Car/Pick-ups/Motorbikes	All vehicles
Oecusse	Naimeco	Bagui-Oelulan	Boenmese	Only walking	All vehicles	Only walking	All vehicles
Oecusse	Costa	Oelulan-Leolbatan	Lakufoan	Only walking	All vehicles	Only walking	All vehicles
Oecusse	Cunha	Nunhenu - Oelkaem	Nuapai	All vehicles	All vehicles	All vehicles	All vehicles
Baucau	Alawa Kraik	Baguia-Larisula	Afaguia	Only walking	All vehicles	All vehicles	All vehicles
Baucau	Larisula	AlawaKraik-Larisula	Baiyana	Only walking	All vehicles	All vehicles	All vehicles
Lautem	Baricafa	Luro-Baricafa	Afaiya	Only walking	All vehicles	Only motorbikes	All vehicles
Lautem	Luro	Luro-Baricafa	Abere	Only walking	All vehicles	All vehicles	All vehicles
Baucau	Bahu	Boile-Uatabo	Boile	Only walking	All vehicles	Only walking	All vehicles
Baucau	Buruma	Boile-Uatabo	Tasi	Only walking	All vehicles	Only walking	All vehicles

**Changes regarding the main mode of transport** between the time of the Baseline Survey and the End-line Survey are presented in table 7. Although there is a reduction in the percentage of respondents who mentioned that walking is their main means of transport, in a large number of the cases people still **walk to any socio-economic facility** (more than 70 % for men and women groups).

**Truck, angunnas and mikrolets** are used with similar **frequencies** by men and women and experienced a reduction in use, probably due to the fact that in the selected areas ojeks have controlled the market. Overall, the fact that still a large percentage of the rural people mainly rely on walking is related to the still limited availability of public transport and - where public transport is available - the affordability of public transport.

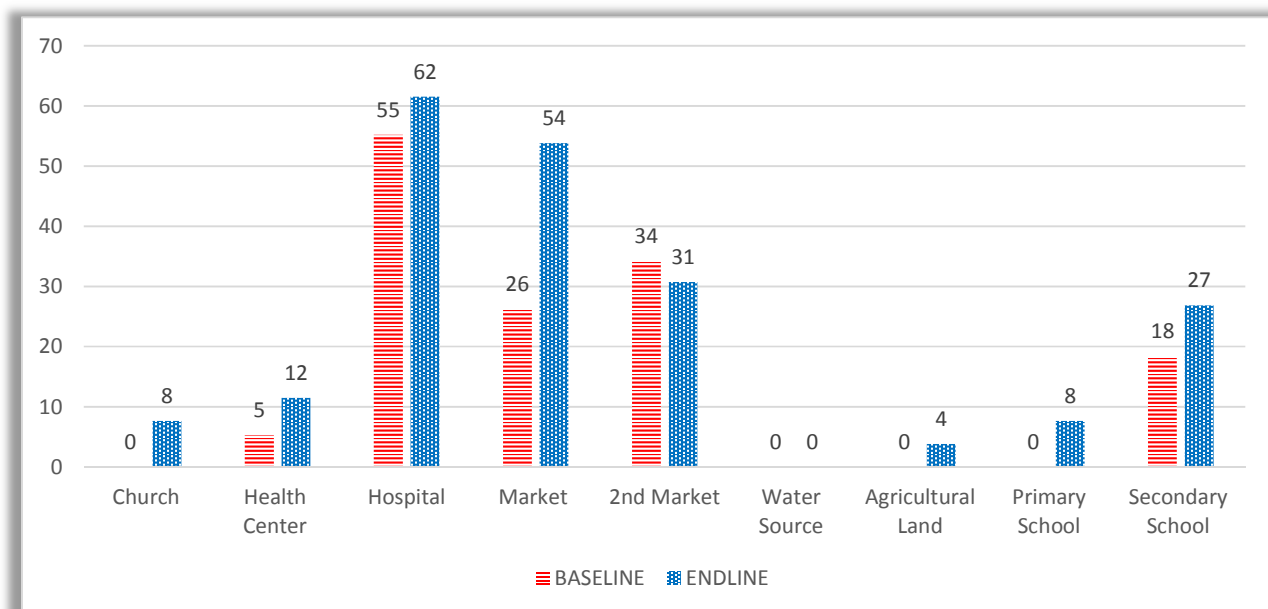
Improved rural road access has resulted in a **clear increase in the use of motorbikes** and a smaller increase in the use of mikrolets and taxis.

**Table 7: Changes in Main Mode of Transport**

MEANS OF TRANSPORT	BASELINE (%)	ENDLINE (%)	CHANGE (%)
Truck or Angunna	11	10	-1
Mikrolet	1	3	2
Taxi	0	3	3
Motorbike	3	8	5
Walking	83	75	-8
Other	1	0	-1
No answer	1	1	0

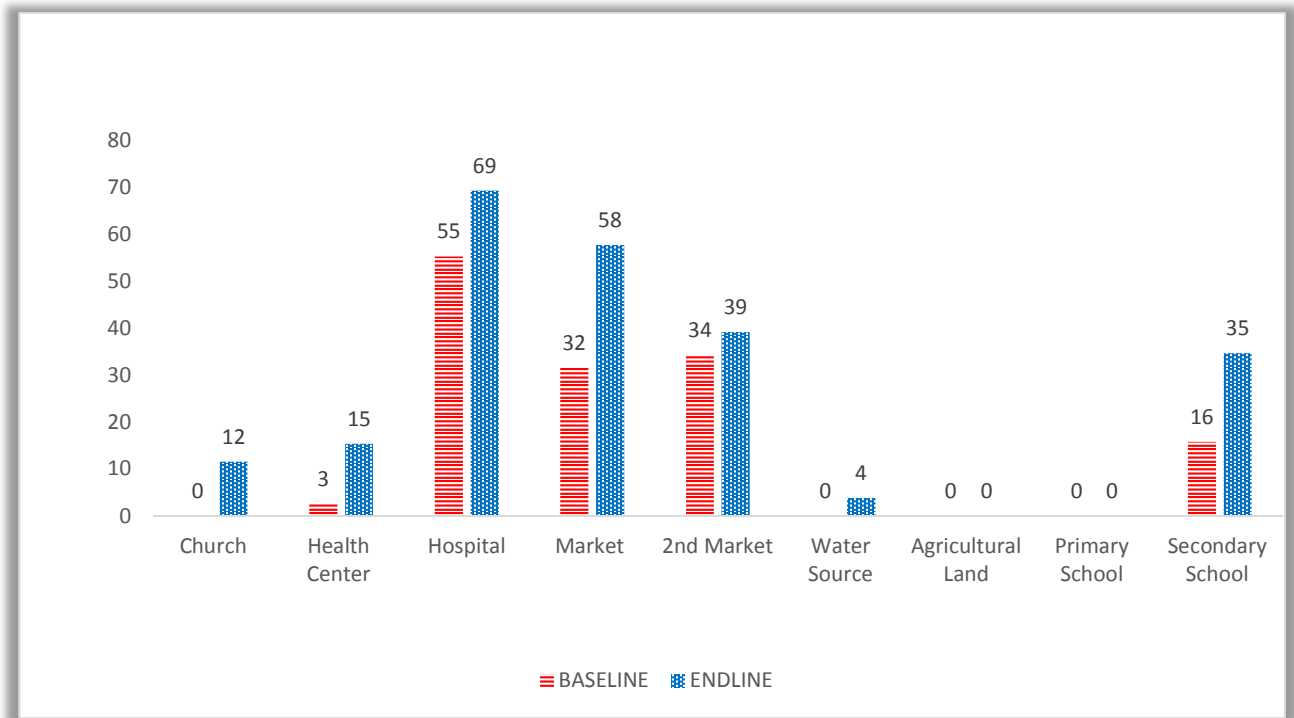
Figure 5 and 6 are showing respectively baseline and end-line data on women’s and men’s responses on the increased use of motorized transport<sup>16</sup> to different socio-economic facilities.

**Figure 5: Change in Motorized Transport to Selected Socio-economic Facilities – Women Responses**



<sup>16</sup> Motorized Transport includes also bicycles and handcarts; however, those type of transports are very limited in number.

**Figure 6: Change in Motorized Transport to Selected Socio-economic Facilities – Men Responses**



Figures 5 and 6 indicate that:

- Facilities usually located in the vicinity of the Suco, such as health centers, water sources, agricultural land and primary schools are still accessed by foot in the majority of the cases. In a few cases female and male groups reported an increase in the use of motorized transport to reach churches.
- The aggregated data indicate a significant increase in the number of men and women who now use motorized transport to go to **markets, hospitals and secondary schools**.
- Disaggregated data show that walking has been replaced by other types of transport, such as taxis (ambulances), mikrolets and motorbikes to reach hospitals. Markets are more frequently accessed by angunna/truck, motorbikes and mikrolet.
- There is no difference in the changes of the use of motorized transport between men and women. However women use less motorbikes as a means of transport than men (6 % of the women and 10 % of the men).

Even when an improvement in the availability of public transport facilities is possible after the rehabilitation of a road, the actual availability of such services is not ensured. Furthermore, even when improved road access leads to an increased availability of public transport services, local people might not be able to afford the cost of such public transport facilities.

### **3.7 Changes in travel times for the transportation of people, goods and services**

The lack of public transport facilities and - when available - their still relatively high costs, are major constraints for people to travel by motorized transport. Most people still continue to walk to reach main socio-economic facilities such as markets and health centers. For this reason, significant reductions in travel time of people have not materialized yet along most of the roads that were rehabilitated.

At a number of roads however - where there has been a significant increase in the availability of public transport soon after the completion of the rehabilitation works - there has been a substantial decrease in travel time. Table 8



presents information about the reduction in people’s travel times during the dry and rainy season along these roads. These reductions in travel times are very substantial and travel time savings of more than 5 hours were reported.

**Table 8: Reduction in Travel Times to Selected Socio-Economic Services and Facilities**

Municipality	Suco	Road	Travel Time to Market (Minutes)						Travel Time to Hospital (Minutes)						Travel Time to Secondary School (Minutes)					
			Dry Season			Rainy Season			Dry Season			Rainy Season			Dry Season			Rainy Season		
			Baseline	End-line	Reduction in travel time	Baseline	End-line	Reduction in travel time	Baseline	End-line	Reduction in travel time	Baseline	End-line	Reduction in travel time	Baseline	End-line	Reduction in travel time	Baseline	End-line	Reduction in travel time
Maliana	Saburai	Maliana-Saburai	120	30	90	180	40	140	120	30	90	180	30	150	360	30	330	360	30	330
Oecusse	Costa	Oelulan-Leolbatan	300	60	240	300	60	240	330	60	270	330	60	270	300	60	240	360	60	300
Baucau	Bahu	Boile-Uatabo	60	10	50	80	10	70	60	10	50	80	10	70	55	15	40	55	20	35

### 3.8 Changes in cost of transportation for people, goods and services

As explained in section 3.6, most of the roads were not passable for motorized traffic before the start of the rehabilitation works and a comparison of motorized transportation costs between the ‘before’ and ‘after’ situation could therefore not be made for most of the roads. An exception is the Maliana-Saburai Road where people of the Sucos Tapo Memo and Holsa had access to motorable transport before the start of the R4D works. In this case no reduction in transportation cost was reported.

The reason why no reduction in transportation costs were observed yet in the case of the Maliana-Saburai road is related to the fact that the End-line survey was conducted only a few months after the completion of the rehabilitation works. Normally it takes time before an improvement in the road condition leads to an increase in the provision of public transport, and to more competition between public transport providers. As long as this does not happen and a monopoly of providing public transport services continues, a reduction in transportation costs is not likely.

However, there has been a reduction in the cost of renting transports such as Angunnas, Trucks and Mikrolets for transporting building materials and agricultural products to the market. Particularly the cost of renting mikrolets has significantly decreased. Table 9 shows differences in renting costs.

**Table 9: Reduction in Travel Costs for Renting Angunnas, Trucks or Mikrolets**

TYPE OF TRANSPORT	Angunna		Truck		Mikrolet	
	Rainy Season	Dray Season	Rainy Season	Dry Season	Rainy Season	Dray Season
End-line	58	56	74	72	20	20
Baseline	66	61	88	88	45	45
REDUCTION IN COSTS	-14 %	-9 %	-19%	-22%	-125 %	-125 %

### 3.9 Changes in volumes of traffic for the movements of people, goods and services

**Traffic counting** was the main survey tool used to monitor the impact of the road improvement on the change in the volume of people, goods and services on R4D roads. It is one of the key performance indicators at goal level as formulated in the R4D M&E Results Framework.

#### 3.9.1 Total volumes of traffic

As was done during the Baseline study, the traffic was divided in 12 different vehicle categories. Figure 7 shows the **aggregated results of all the traffic counts along the sampled R4D roads** over 7 consecutive days, for both the Baseline and the End-line situation.

There has been an overall **increase of almost 200 %** in the volume of traffic along the sample roads for all the vehicle categories - with the excluding of pedestrian traffic. The R4D 2014 target as per its M&E Results Framework was a 15 % increase only in motorized traffic.

As figure 7 shows there has been a decrease in the number of pedestrian travel with about 10% since the road works were completed, which could indicate an increase in the use of public transport and motorbikes. This appears to be consistent with the finding that traffic generated by Mikrolets - which are mainly used for public transport – doubled and the use of motorbikes increased with about 250%.

As shown in figure 7, pedestrians and motorbikes (including ojek<sup>17</sup>) remain to generate the large majority of the traffic (95%, of which 65 % by motorbikes and 30 % by pedestrians) after the completion of the rehabilitation of the roads.

Horses also remain a relatively important mode of transport. Although the increase in the use of other motorized transport like trucks, tractors, private cars and buses is small in absolute numbers, the percentual increase of these modes of transport is significant, i.e. showing more or less a doubled or tripled. Buses, travelling mostly to the Municipal capital, are still very few, since they are not a common means of transport on rural roads.

The road that has experienced the **largest increase in traffic volumes** (excluding pedestrians) is the **Maliana-Saburai road** in the Municipality of Bobonaro. Motorbikes are the highest in numbers (6,191 units in the end-line compared to 1269 in the baseline, an increase of almost 400 %). The Maliana-Saburai road also experienced a large increase in the number of mikrolets (from almost none to 19 over a week period, more than once per day). Also movements of trucks, angunnas and pick-up cars increased significantly after the completion of the road works.

---

<sup>17</sup> *Ojeks: Motorbike taxi Service*



**Figure 7: Aggregated Travel Volume**

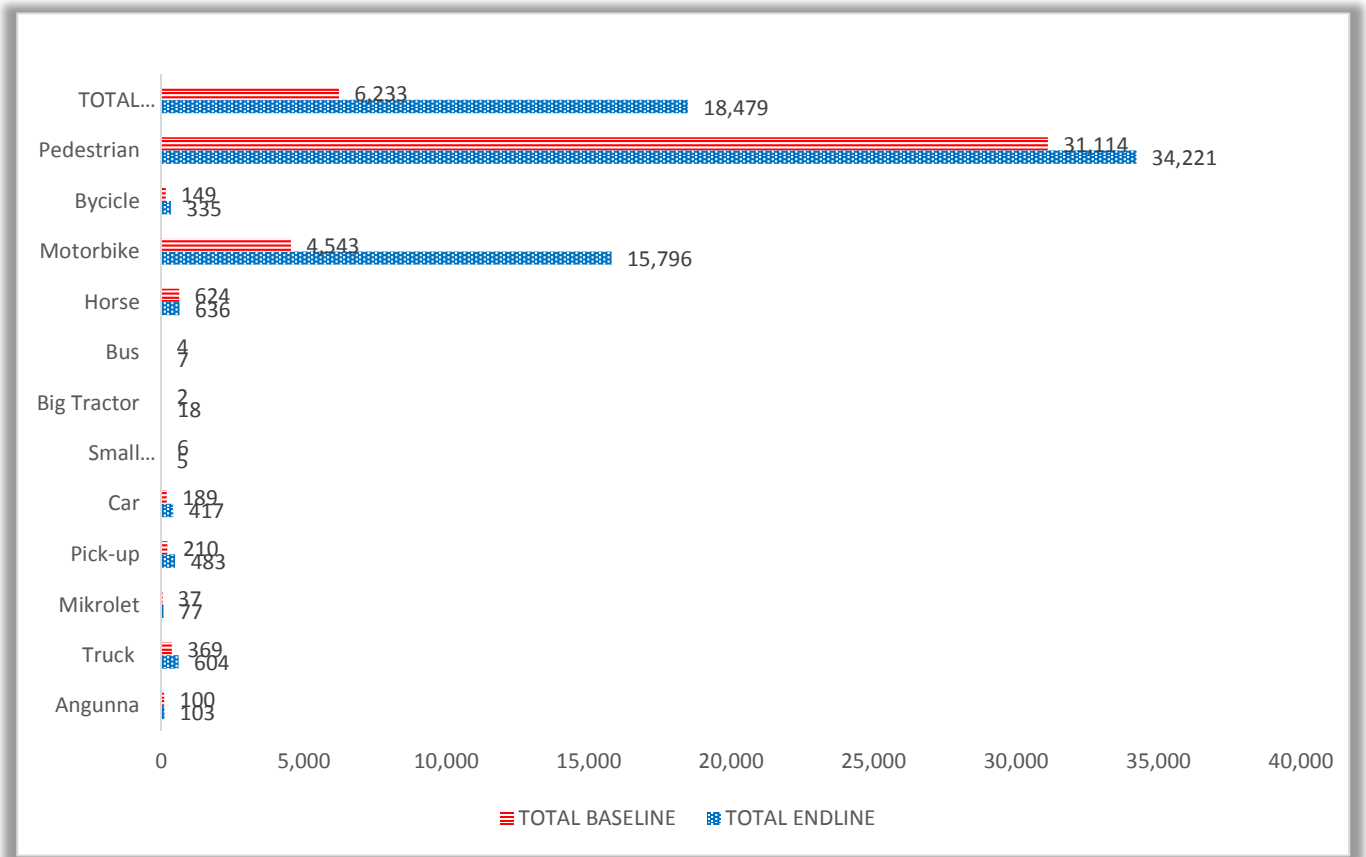
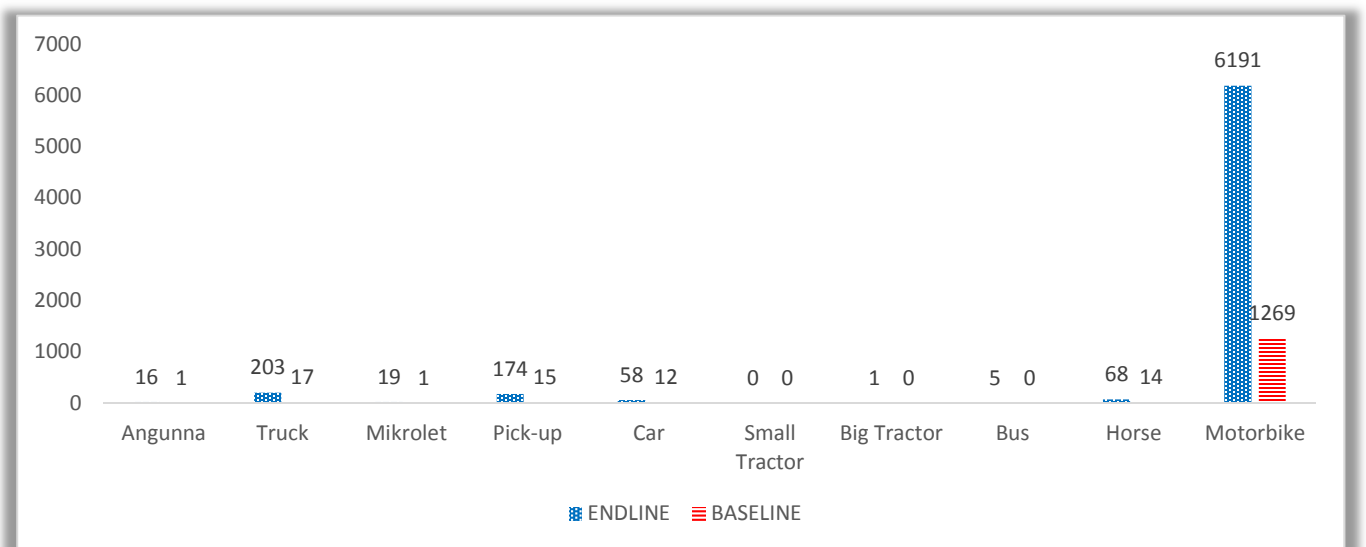


Figure 8 shows the changes in traffic since the completion of the rehabilitation works. In total 6,740 traffic counts were made over a one week period during the End-line Survey whereas only 1,355 traffic counts were made during the Baseline Survey. This represents a five-fold increase in overall traffic.

**Figure 8: Changes in Volume of Traffic on the Maliana-Saburai Road (exc. Pedestrian)**



Other roads that showed a large increase in traffic are the Balibo-Cowa road in Bobonaro Municipality (2,929 traffic counts during the End-line Survey against 1,239 traffic counts during the Baseline Survey) and the Lookou road, also located in the Municipality of Bobonaro (1,703 traffic counts during the End-line Survey and 16 traffic counts during the Baseline Survey).

The Lookou road also saw a very large increase in motorbike traffic; from hardly any motorbike traffic at the time of the Baseline Survey to 1,600 counts during the End-line Survey. During market days, the recorded volumes of traffic are generally significantly higher on all the sampled roads than on non-market days.

### 3.9.2 Total number of Passenger Car Units per road

Different means of transport are characterized by different transport loads. To enable a single-unit comparison of total traffic volumes along the sampled roads between the ‘before’ and ‘after’ situation, the traffic counts of motorized vehicles and pedestrians were converted into **Passenger Car Units (PCUs)**.

The following conversion rates were used to convert the different categories of transport into PCUs:

Truck	=	2.0 PCU
Angguna	=	2.0 PCU
Bus	=	2.0 PCU
Mikrolet	=	1.5 PCU
4WD car	=	1.0 PCU
Pick-up car	=	1.0 PCU
Saloon car	=	1.0 PCU
Taxi	=	1.0 PCU
Motorbike	=	0.3 PCU
2-wheel tractor	=	0.7 PCU
4-wheel tractor	=	1.5 PCU
Bicycle	=	0.2 PCU
Hand-cart	=	0.3 PCU
Pedestrian	=	0.1 PCU

Table 10 presents a comparison between the total PCUs at the time of the Baseline Survey and the total PCUs at the time of the End-line Survey for each of the roads where traffic counts were conducted.

**Most of the roads** experienced an **increase in PCUs**. The only exceptions are the Boile-Uatabo road and Luro-Baricafa road in Baucau Municipality. This is mainly due to a significant reduction in the number of pedestrians<sup>18</sup>.

The roads with the **highest PCUs values at the time of the End-line Survey** are the **Maliana-Saburai** and the **Balibo-Cowa road**, followed by the maintained **Maumeta-Fadabloco road**. The largest percentages **increase in PCUs** are found on **the Lookou road (2,215 %)**<sup>19</sup>, the **Maliana-Saburai road (346 %)** and on the **Mahata-Kusi road (182 %)**.

---

<sup>18</sup> Recent violent events among gang groups along the Boile-Uatabo road led to a considerably decreased the traffic on this road.

<sup>19</sup> This road was hardly passable by any type of vehicle before the road rehabilitation. Once the road was opened this resulted in a significant increase in traffic.

**Table 10: Comparison of PCUs and Average Speed between Baseline and End-line Situation**

PCU CONVERSION	Average Speed Baseline	Average Speed End-line	Total PCUs BASELINE	Total PCUs ENDLINE	Difference PCU	% Difference in PCUs	Total Number of Sucos
Road: Luro-Baricafa, Rehabilitation (7,0 Km)	13.3	26,0	1,407	1,107	-300	-21	2
Road: Baqui-Larisula, Rehabilitation Road (8,0 Km)	17.5	28,0	534	881	348	65	2
Road: Uatabo-Boile, Rehabilitation Road (5,2 Km)	17.5	27,0	984	476	-508	-52	2
<b>TOTAL BAUCAU</b>			<b>2,924</b>	<b>2,464</b>	<b>-460</b>	<b>-16</b>	
Road: Laulara-Ornai, Rehabilitation Road (5,5 Km)	20	25,0	437	452	15	4	2
Road: Maumeta-Fadabloco, Maintainance road (8,2 Km)	20	25,0	835	1,152	318	38	4
<b>TOTAL DILI-AILEU</b>			<b>1,272</b>	<b>1,604</b>	<b>333</b>	<b>26</b>	
Road: Maliana-Saburai, Rehabilitation Road (11 Km)	25	30,0	643	2,871	2,227	346	3
Road: Balibo-Cowa, Rehabilitation Road (10,0 Km)	25	30,0	611	1,423	812	133	2
Road: Lookeu, Rehabilitation Road (3,0 Km)	25	30,0	35	801	767	2,215	1
<b>TOTAL BOBONARO</b>			<b>1,289</b>	<b>5,094</b>	<b>3,806</b>	<b>295</b>	
Road: Mahata-Kusi, Rehabilitation Road (9,0 Km)	20	30,0	380	1,072	692	182	2
Road: Baqui to Leolbatan, Rehabilitation Road (8,0 Km)	20	30,0	238	489	251	106	2
<b>TOTAL OECUSSI</b>			<b>618</b>	<b>1,561</b>	<b>943</b>	<b>153</b>	
<b>TOTAL SUM PCUs</b>			<b>6,102</b>	<b>10,724</b>	<b>4,622</b>	<b>76</b>	

### 3.10 Changes in availability and use of economic assets/services by local communities

Increases in the **availability and use of economic assets and services** by local communities usually require a long time to materialize. When affordable transport facilities are not available, even if the road condition has improved, usually no major changes are to be expected in terms of increased access and use of economic/services and facilities.

#### 3.10.1 Travel frequencies to main socio-economic services

During the Baseline Surveys, information on travel frequencies to main socio-economic services and facilities was collected. For those services and facilities where the main mode of transport remained walking, no significant change in frequency of travel was observed, as was expected. This was particularly the case for travel to primary schools and to local health centers<sup>20</sup>. For students attending secondary schools at Municipal capitals, the improvement in the road condition also usually did not affect the travel frequencies to those schools as the students normally moved to live in these Municipal capitals.

After the completion of the road rehabilitation or maintenance works, a **24-ambulance service** has become available along most of these roads and this would suggest that the frequency of visits with an ambulance to a

<sup>20</sup> Very frequently, one of the main problems that was reported concerning the use of health facilities was not the accessibility but rather the quality of the service. Usually doctors or nurses are available only sporadically - when the road was in poor conditions they had no access at all. Those health facilities are also often poorly-equipped with medicines and medical equipment.

hospital will increase. In the past, hospitals were otherwise difficult to reach because of lack of motorized transport access, and people used to access them very rarely.

No change in frequency in visits to markets were reported. This is also as what would have been expected as markets take place on regular fixed days.

A small reduction of about 5-7% in the frequency of visits (by women) to water sources was reported. One of the reasons could be that, given the improved road' conditions, water can be transported more easily in larger volumes, e.g. by hand-carts, and therefore less frequent visits to the water source are necessary.

**Photo 5: Use of Hand-Carts Along R4D Rehabilitated Road**



### 3.10.2 Access to public transport facilities

When road conditions are improved, access to **transport facilities** is a key factor influencing the increase and ease in access to socio-economic services – particularly by saving travel times and travel costs. In particular, increased and affordable public transport offers potential for farmers to enhance their capacity of expanding agricultural production and marketing by enabling a greater access to markets and less deterioration and wastage due to the reduced travel times. It also facilitates the access to inputs (seeds and fertilizers), and a greater outreach of agricultural extension services. Increased returns from the sales of more (high-value) agricultural products can also be re-invested by farmers to expand their agricultural business and increase productivity.

**Baseline data** showed that the **average travel time to transport facilities** before the road construction works was **91 minutes**. In remote locations, such as the Mahata-Kusi and Baqui-Oelulan-Leolbatan roads in Oecusse, these travel times were much higher (3.5 to 6 hours).

**After the roads were rehabilitated**, the End-line data (responses from men and women) show that the average travel time to transport facilities has been reduced to **23 minutes, i.e. a reduction of 74 %** in walking time.

Figure 9 shows the comparison between the Baseline and End-line situation of the average travel time (i.e. walking) for the people of the Sucos/Aldeias along the R4D roads to the nearest transport facility. As can be seen there has been a considerable reduction in these travel times along all roads. In most of the cases there is now **access to transport facilities within the Aldeia**. Two roads where travel distances to the nearest transport facility are still

long, are the Mahata-Kusi road in Oecusse (113 minutes average walking distance) and the Laulara-Ornai road in Aileu Municipality (60 minutes walking distance).

**Figure 9: Average Walking Times to Nearest Transport Facility**

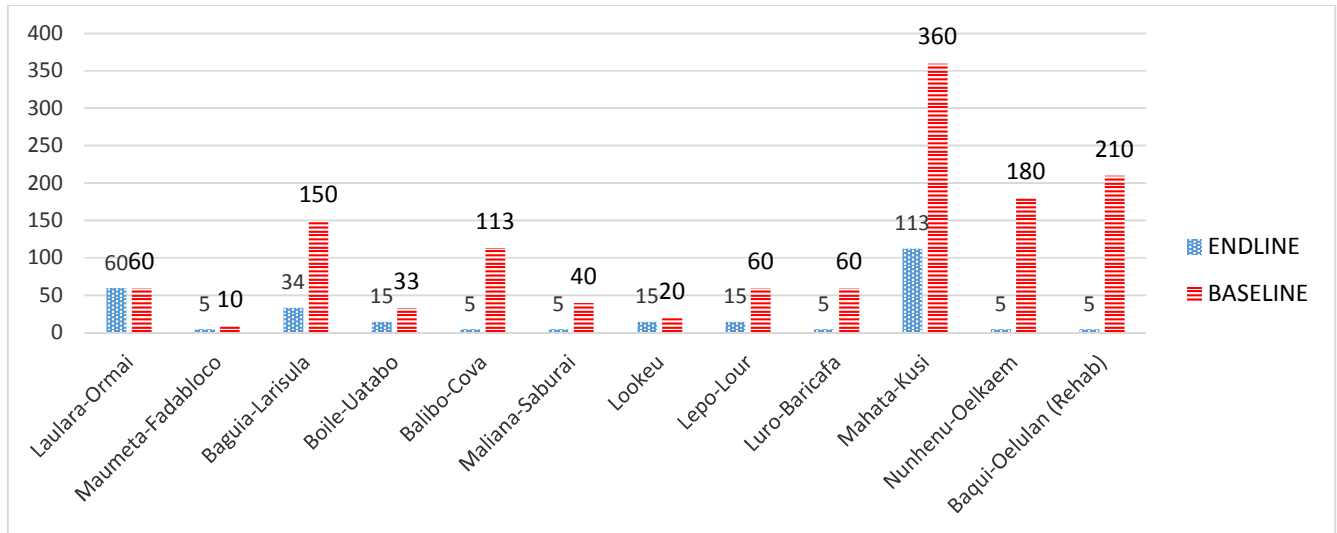


Table 12 presents an overview of the changes in the availability and frequency of public transport along the sampled roads. The information in table 12 shows that, overall, there has been a significant increase in the availability of public transport.

In the surveyed areas, there are mainly three types of transportation available, **angunnas, mikrolets and ojeks (motorbikes)**. Almost half of the Aldeias/Suco surveyed had no access to any type of ‘public’ transportation before the road was rehabilitated.

17 out of the 24 Sucos situated along the rehabilitated roads experienced a considerable increase in the availability of public transport. **10 out of the 25 Aldeias** are now served by **public transport more than once per day**.

In 12 Sucos where no public transportation was available at all at the time of the Baseline Survey, public transport became available after the rehabilitation works were completed. Whereas hardly any public transport was available at the time of the Baseline Survey, angunna/trucks now ply the roads with an average frequency of 2-3 times per week. Mikrolets now travel on the improved roads 1-2 times per week and ojeks are available daily.

Although cheaper means of public transportation like Angunnas and Mikrolets have become increasingly available, the relatively expensive Ojeks<sup>21</sup> still remain the most widely available means of public transport.

<sup>21</sup> A return trip by ojek on one of the rehabilitated R4D roads in Bobonaro Municipality can cost up to 10 USD.

**Table 11: Change in Availability of Public Transport to Markets and Municipal Capitals**

Municipality	Suco	Road	Frequency of Availability of Different Types of Public Transport during <b>Baseline Study</b> (Frequency in number of times per week; in case of more than 1 time per day this is marked as 7+)			Frequency of Availability of Different Types of Public Transport during <b>Endline Study</b> (Frequency in number of times per week; in case of more than 1 time per day this is marked as 1+)			Increase in availability and frequency of public transport Y = Yes N = No
			Truck / Angunna	Mikrolet	Ojek / Motorbike	Truck / Angunna	Mikrolet	Ojek / Motorbike	
Aileu	Hautoho	Maumeta-Fadabloco	0	0	0	8	0	0	<b>Y</b>
Aileu	Fahisoi	Maumeta-Fadabloco	7	0	0	8	0	0	<b>Y</b>
Aileu	Cotolau	Laulara-Ornai	0	0	0	0	0	0	<b>N</b>
Aileu	Maumeta	Maumeta-Fadabloco	0	0	0	8	0	0	<b>Y</b>
Aileu	Fadabloco	Maumeta-Fadabloco	0	0	0	8	0	0	<b>Y</b>
Baucau	Bahu	Boile-Uatabo	0	0	0	0	2	0	<b>Y</b>
Baucau	Buruma	Boile-Uatabo	0	0	0	0	2	0	<b>Y</b>
Bobonaro	Balibo Vila	Balibo-Cova	0	0	8	0	0	8	<b>N</b>
Bobonaro	Cowa	Balibo-Cowa	0	0	1	0	0	8	<b>Y</b>
Bobonaro	Maliana	Holsa	0	1	8	1	8	8	<b>Y</b>
Bobonaro	Maliana	Tapo Memo	0	1	0	1	8	8	<b>Y</b>
Bobonaro	Maliana	Saburai	0	0	0	1	8	8	<b>Y</b>
Covalima	Debos	Lookeu	0	0	0	0	0	8	<b>Y</b>
Covalima	Lepo	Lepo-Lour	0	0	0	0	0	8	<b>Y</b>
Dili	Dare	Laulara-Ornai	0	0	0	0	0	0	<b>N</b>
Lautem	Baricafa	Luro-Baricafa	0	0	0	7	0	0	<b>Y</b>
Lautem	Luro	Luro-Barikafa	0	0	0	7	7	0	<b>Y</b>
Oecusse	Banafi	Mahata-Kusi	0	0	0	1-	0	7	<b>Y</b>
Oecusse	Taiboco	Nunhenu-Oelkaem	0	0	0	7	0	7	<b>N</b>
Oecusse	Lelaufe	Mahata-Kusi	0	0	0	1	0	7	<b>Y</b>
Oecusse	Naimeco	Baqui-Oelulan (Rehab)	0	0	0	2	0	8	<b>Y</b>
Oecusse	Costa	Oelulan-Leolbatan	0	0	0	1	0	7	<b>Y</b>
<b>Frequency in number of times per week (Average)</b>			<b>0.3</b>	<b>0.1</b>	<b>0.8</b>	<b>2.7</b>	<b>1.6</b>	<b>4.2</b>	

No change in the availability of public transport was observed on the Laulara-Ornai road because the rehabilitation works had not been completed at the time of the End-line Survey. No major changes were also observed on the Nunhenu-Oelkaem road where R4D did only maintenance works.

### 3.11 Impact on local economic businesses activities

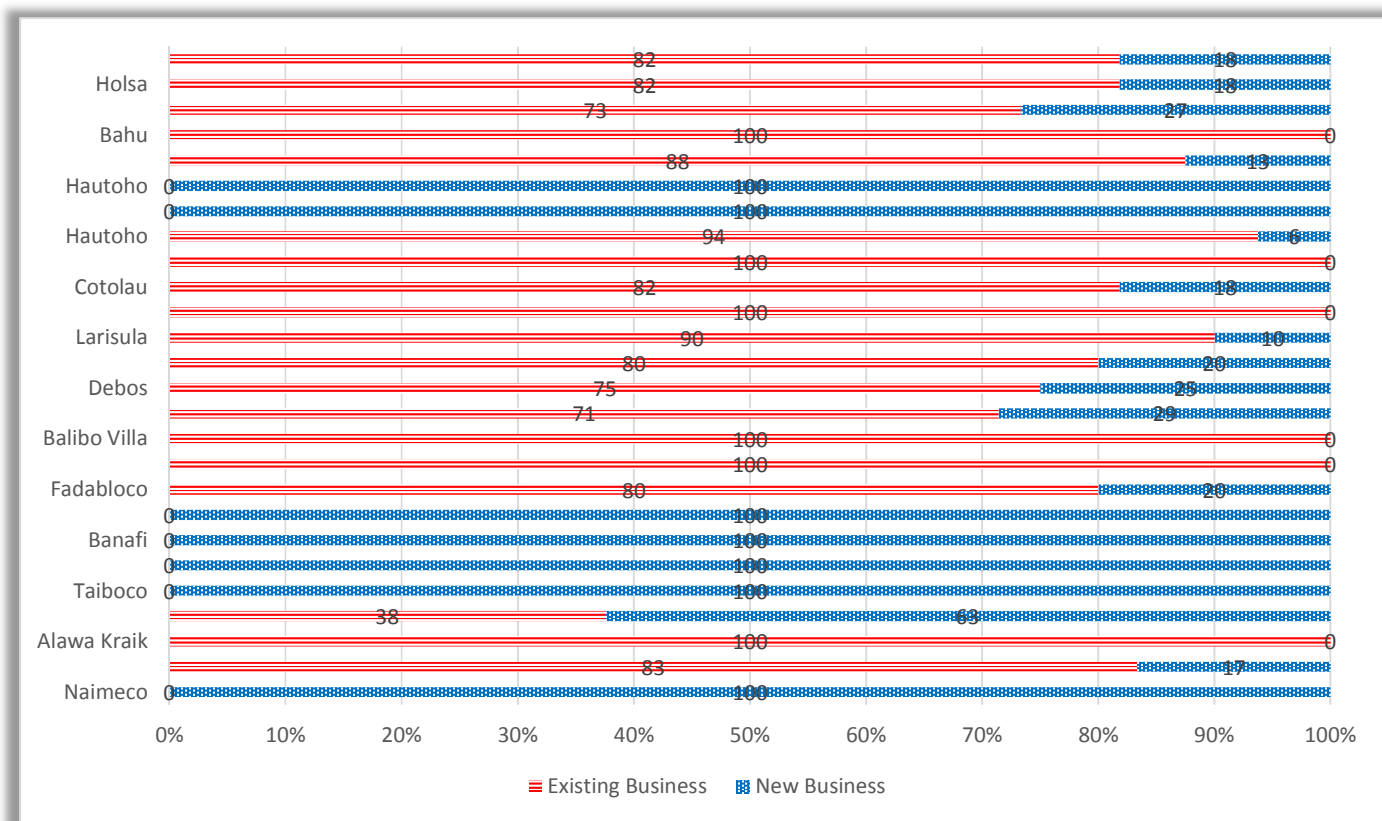
Increased motorized year-round road access is key to local economic development. The improvement of a road and the increase in access to transport facilities offers great potentials for the creation of new businesses and an increase in turn-over of existing ones.

To capture the changes in business activities, data from the Baseline Survey were compared with the data collected during the End-line Survey. During the End-line Survey data were collected from **195 businesses**.

### 3.11.1 Creation of new businesses within sampled Sucos along R4D roads

Survey results show that **almost 30 %** of the businesses along the R4D roads were **new businesses**. This large increase in the number of new businesses can be explained by a reduction in transportation costs. This has resulted in an increase of products that can be marketed along the road and more incentives for local entrepreneurs to invest in new businesses. Figure 10 provides an overview per Suco of the percentages of existing and newly established businesses along the sampled roads.

**Figure 10: Newly Established Businesses across the Surveyed Roads**



The figure shows that all businesses along the roads in Oecusse are newly established businesses. The Sucos along those roads were very isolated before the roads were rehabilitated and had no access to transport facilities. The improved road access facilitated the transport of materials and commodities to those Sucos and provided incentives to open local businesses.

### 3.11.2 Types of businesses

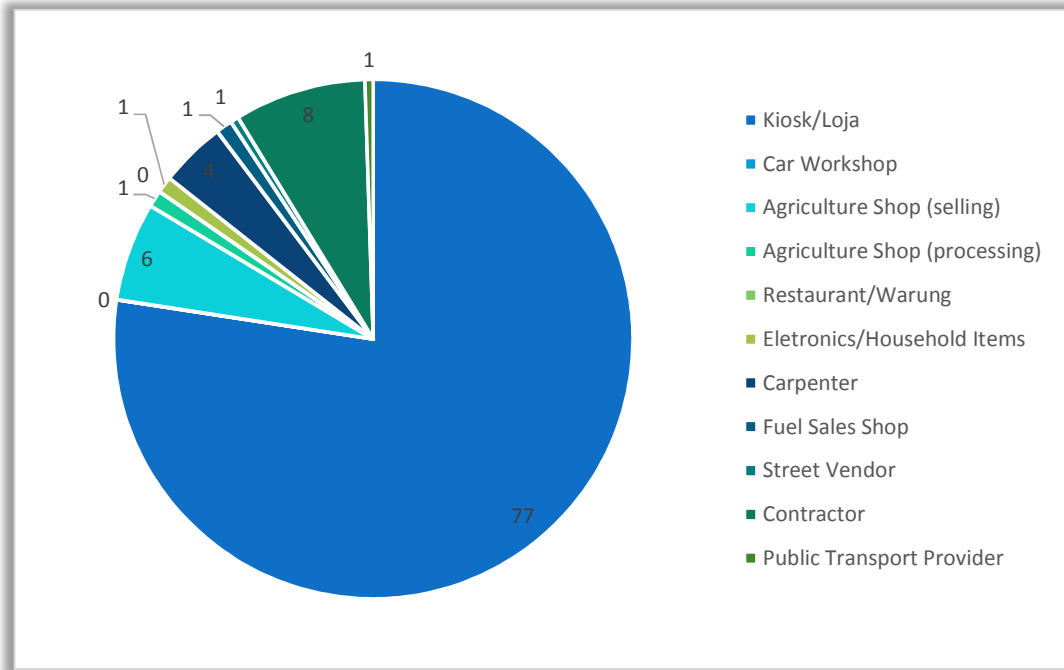
Figure 11 summarizes the types of businesses along the R4D roads. The largest category of businesses are **local shops like kiosks (77 %)**, followed by **local construction companies (8 %)** and **agricultural products shops (6 %)**.

Results from the survey and general observations from frequent field visits suggest that **local shops** are the **most frequent types of new local economic activities** that have been established once increased access to transport is available. In some cases, labourers that worked on R4D construction works have used part of their R4D earnings to open a new kiosk. In a very few cases, other types of new business activities were established – such as a bakery



shop along the Laulara-Ornai road in Aileu Municipality and a few guest-houses in Suco Larisula along the Baguia-Larisula road in Baucau Municipality.

**Figure 11: Profile of Surveyed Local Businesses along R4D Roads (as % of all Businesses)**



**Photo 6: Examples of Newly Established Businesses**



*New kiosk owner, Same-Rotuto Road, Same Municipality*



*Bakery Business, Laulara-Ornai Road, Aileu Municipality*

There are a number of barriers that make it difficult or impossible for local entrepreneurs to open new businesses or to expand their current ones:

- **Lack of credit facilities:** Access to bank loans is a major constraint for people in rural areas to invest in any new type of business that requires some capital;
- **Lack of entrepreneurship knowledge and skills:** In many cases it was reported that, once the road has become accessible, people did not know exactly what kind of business activities to initiate. Training and business development support from Government institutions such as the ‘Instituto de Apoio ao Desenvolvimento Emprezarial’ (IADE) could have a positive impact and information sharing between R4D and IADE about rehabilitated R4D roads is therefore recommended;

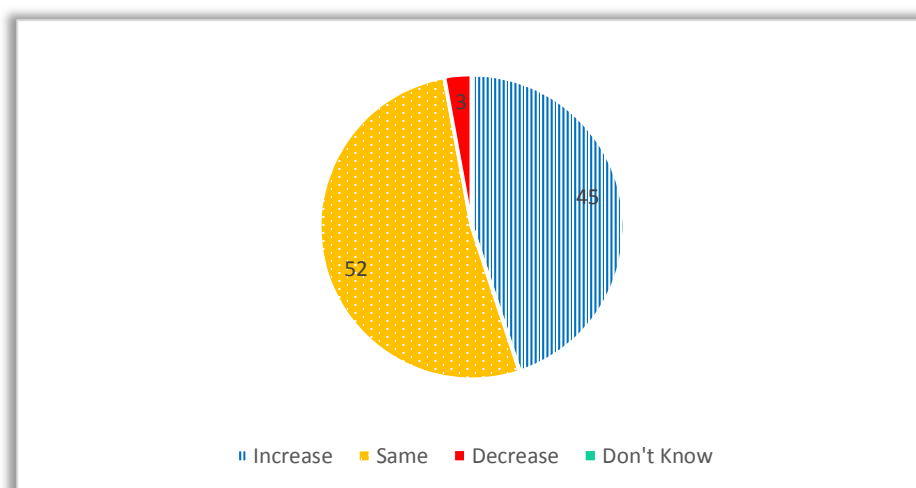


- **Lack of affordable means of transport:** In many cases the rural people lack the financial means to afford the still high costs of public transport or the cost of renting transportation (like trucks). Once more competition in providing transportation services or facilities will increase, it is expected that the transportation costs will reduce and become more affordable;
- **Lack of infrastructure facilities and technologies:** Apart from improved road access, other facilities and technologies need to be available to enable economic development. For instance, in agriculture-based economies, a lack of storage facilities and still low productivity levels due to poor technologies, can prevent farmers to expand businesses.

### 3.11.3 Changes in types of products

The End-line Survey also explored whether existing businesses showed an increase in the **type of commodities** they started to offer, related to improved transport facilities after the completion of the rehabilitation works. Products that were in the past not available because they were too difficult to carry, can be transported with the improved roads' condition and the increased availability of transport. This is the case for instance with commodities such as **rice, fuel** and **construction materials**. Figure 12 shows the changes in the types of products that local businesses are selling/providing since the improvement of the roads. As can be seen in figure 25, 45 % of the businesses reported that there was an increase in the types of commodities that they started selling since the improvement of the roads.

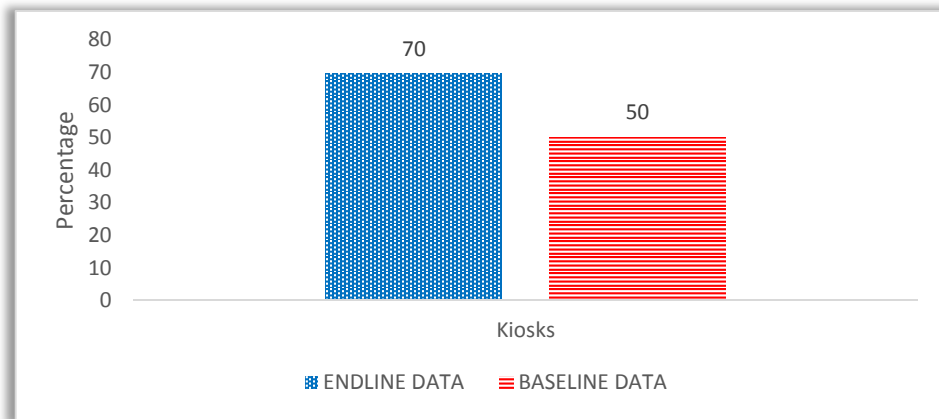
Figure 12: Change in Type of Products Sold/Provided



### 3.11.4 Business turn-over

Figure 13 presents the findings regarding the changes in weekly turnover for kiosks, comparing the baseline situation with the end-line situation. Given the low number of other newly established or existing businesses on R4D roads, only the results for Kiosks are presented.

**Figure 13: Average Weekly Turnover in USD for Kiosks**



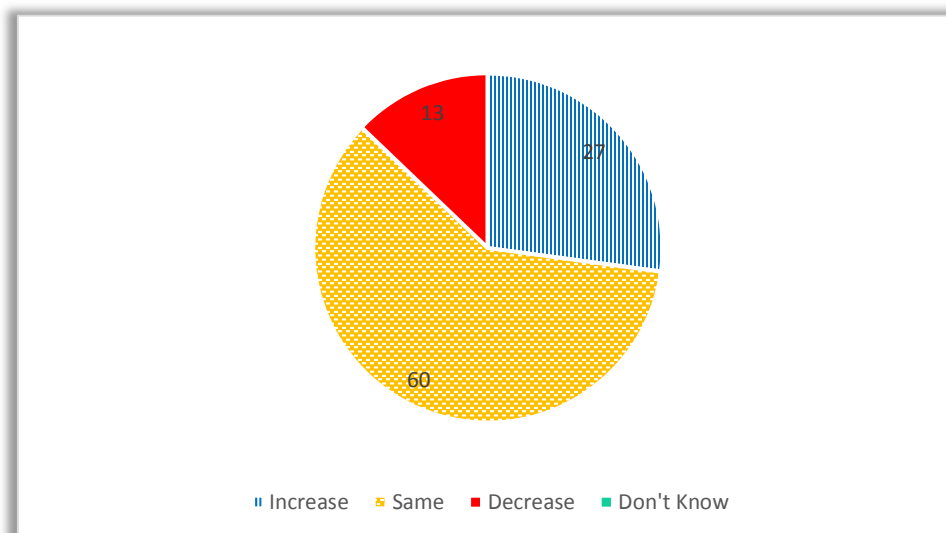
**Kiosks reported an increase in weekly turn-over of 40 %.** The level of turn-over was very variable, depending on the location and the size of the Kiosk. If located closer to main city centers, kiosks are normally bigger in size and have a higher number of costumers' turn-out. For instance in Suco Balibo Villa, on the Balibo-Cowa road, in Bobonaro Municipality, kiosks reported on average USD 165 turn-over per week (some kiosks of this Suco even had a turn-over of up to USD 400).

### 3.11.5 Changes in numbers of customers to local businesses

As can be seen in figure 14, 27% of the businesses experienced an increase in the number of customers after the completion of the rehabilitation works, whereas 13% of the businesses noted a decrease in the numbers of their customers - mainly due to an increase in competition.

The findings indicate that there has been a slight increase in the numbers of customers, which, together with the larger variety of available products and increased purchases by the customers, has led to an average increase in turn-over for businesses like kiosks.

**Figure 14: Changes in the Number of Customers after Road Rehabilitation**



### 3.11.6 Changes in number of staff employed by local businesses

Most of the businesses located along the R4D roads are small, family – managed, businesses. Local kiosks are typically managed by one or two family members. Results from the End-line Surveys do not show any significant change in the number of people managing or being (self-) employed by the businesses. The survey showed that, overall, there is a slight decrease of 5 % of the average number of people employed by local businesses. An explanation for this is that many of the newly established businesses are managed by one person and this has led to an overall slight decrease of the average number of persons employed per business.

### 3.12 Prices of main commodities

Due to the improved road access and transport facilities, **prices** of local construction materials like **sand** were already reported to have **decreased** substantially (more than 20% decrease). Other bulk commodity for which the prices declined significantly since the road condition improved are **rice** (6-13% decrease in price) and **cement** (7-9% decrease in price). The decrease in the prices of construction materials due to a reduction in transportation costs, and their increased availability in local shops, has also resulted in **an increase of the construction of concrete houses and buildings**.

Table 12 summarizes the changes in prices of main commodities as reported by women and men. Reported average changes in prices of commodities between the Baseline and End-line situation of less than 5% are considered as not significant as these changes might have been caused by temporary (seasonal) fluctuations in the supply (and thereby the price) by wholesalers to the shops.

**Table 12: Change in prices of main commodities**

	<i>% Change of Prices Women's Responses</i>	<i>% Change of Prices Men's Responses</i>	<i>Available only After Road Construction (%) Women's and Men's Responses</i>	<i>Not yet available (%) Women's and Men's Responses</i>
<b>Rice</b>	-13 %	-6 %	38	6
<b>Sugar</b>	8 %	14 %	12	6
<b>Cigarettes</b>	3 %	5 %	10	6
<b>Soft drinks</b>	-4 %	-2 %	8	10
<b>Gasoline</b>	4 %	3 %	19	29
<b>Oil</b>	7 %	-3 %	10	12
<b>Coffee</b>	7 %	8 %	12	19
<b>Sand for Construction</b>	-24 %	-21 %	2	77
<b>Cement</b>	-7 %	-9 %	13	69
<b>Indomie</b>	7 %	6 %	12	6

The prices of sugar and coffee were reported to have increased considerably. In many cases bulk products that are difficult to transport, such as rice, were not even available in local shops before the road was rehabilitated and became available only after the improvement of the of the road. In the majority of the cases, construction materials are still not available in the Sucos.

**Photo 7: New Constructions due to Increased Availability and Reduced Cost of Construction Materials**



*New house in Aldeia Cassal, Maliana-Saburai road*



*Newly finished primary school, Boile-Uatabo road*

Findings from the Community Snapshots are in line with the responses given by local business owners who reported generally only minor price fluctuations. In 31% of the cases an increase in price was reported and only in 9% of the cases a decrease in prices of commodities was reported.

## 4. RECOMMENDATIONS

Results from this study show that there have been improvements in year-round motorized access and a reduction of travel times on R4D roads. Road accessibility and increased transport facilities resulted in improved access to markets, agricultural fields and health care facilities such as hospitals and mobile health services. A 24 hours ambulance service has also become available on most of the roads. Increase in local transportation of building materials and agricultural outputs to markets led to the construction of new buildings and income growth. Those are only a few of the benefits that occurred a few months after the completion of rehabilitation works.

Impact from improved road accessibility is greatly influenced by the availability of public transport. Although there has been a considerable positive impact along R4D rehabilitated roads, more changes in terms of increased availability and affordability of public transports have yet to occur. Transport should be affordable for everyone to bring products from fields to the market but also to access health and educational facilities. On the long term, a further reduction of travel times can be expected when more public transport becomes available and, as the level of agricultural marketing is increasing, more opportunities for traders, service providers and new businesses will be created.

The significant positive effects that good quality rural roads have on agricultural development are widely acknowledged. Integrated planning between these two sectors is expected to maximize the potential benefits and strengthening coordination amongst Government and Donor Programs working in rural roads infrastructure and in agriculture is recommended.

Findings from the impact surveys also show that there is scope for increased support to micro and small entrepreneurs. Training and business development support from Government institutions such as the 'Instituto de Apoio ao Desenvolvimento Emprezarial' (IADE) could have a positive impact if coordinated with rural roads development.

\*\*\*

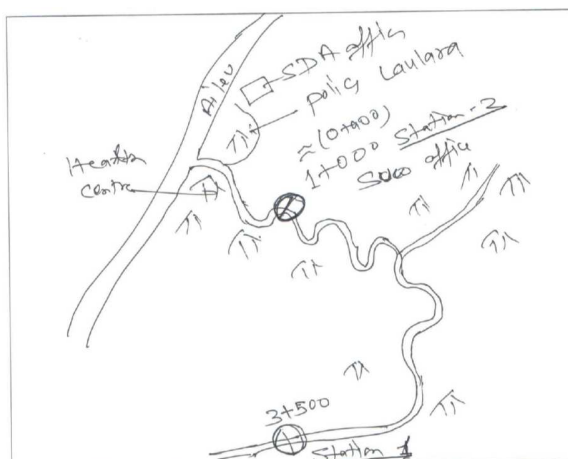
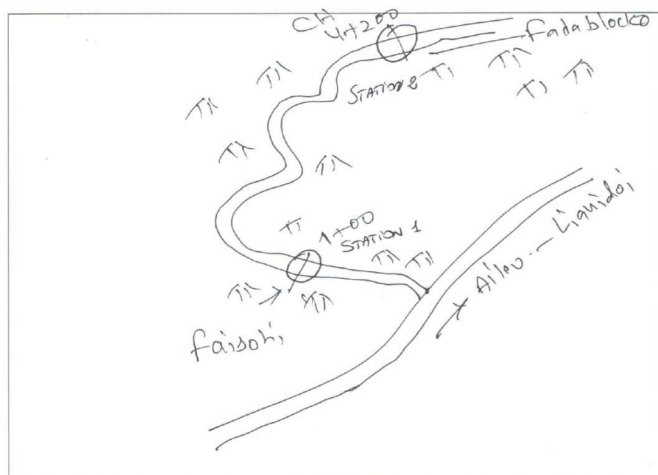
# ANNEXES

## Annex 1: Survey locations for Community Snapshots and LBA Survey

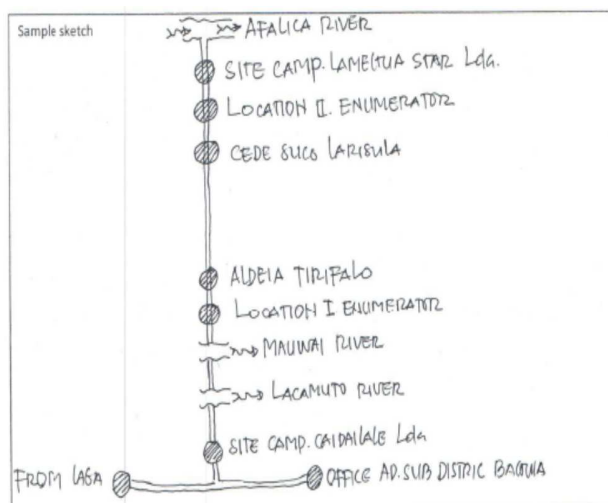
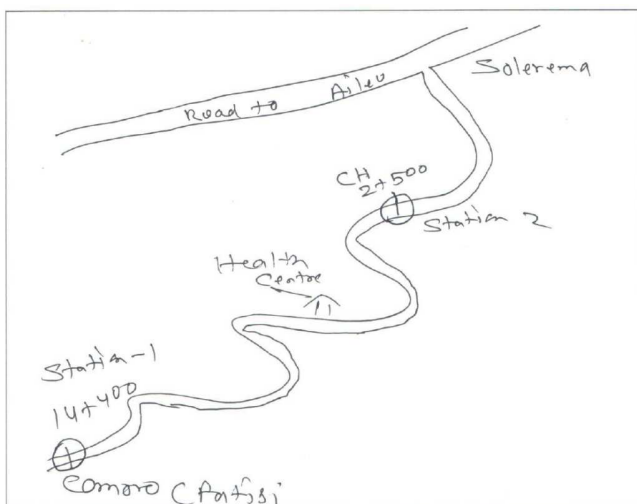
Road No.	District	Sub-District	Road Name	Total Road Length	Suco	Name of Aldeia		
1	Aileu	Laulara	Laulara-Ornai RE	5,5 Km	Cotolau	Ornai		
2			Laulara-Ornai RE		Dare	Sukalau		
5		Remexio	Maumeta-Fadabloco PM		8,2 Km	Maumeta	Tuqueu	
6			Maumeta-Fadabloco PM			Hautoho	Lebutu	
7			Maumeta-Fadabloco PM			Fadabloco	Lilitei	
8			Maumeta-Fadabloco PM			Fahisoi	Mautoba	
		Baucau	Baucau		Boile-Uatabo RE	5,2 Km	Bahu	Boile
					Boile-Uatabo RE	5,2 Km	Buruma	Uatabo
11	Baquia		Baquia - Larisula RE	8,0 Km	Alawa Kraik	Afaguia		
12			Baquia - Larisula RE		Larisula	Baiana		
18	Lautem	Luro	Luro - Barikafa RE	7,0 Km	Luro	Abere		
			Luro - Barikafa RE		Barikafa	Afaiya		
	Bobonaro	Maliana	Maliana-Saburai RE	11 Km	Holsa	Oplegul		
			Maliana-Saburai RE	11 Km	Tapo Memo	Pig Galak		
			Maliana-Saburai RE	11 Km	Saburai	Taz Masak		
24		Balibo	Balibo - Cowa RE	10,0 Km	Cowa	Buai		
25	Balibo - Cowa RE		Balibo Vila		Fatuk Iaran			
27	Covalima	Zumalai	Lookei RE	3,0 Km	Debos	Looqueu		
28		Zumalai	Lepo-Lour	3,0 Km	Lepo	Canua		
33	Oecusse	Pante Macasar	Baqui-Oelulan RE	15,5 Km	Naimeco	Boenmese		
34		Pante Macasar	Oelulan-Leolbatan RE		Costa	Lakufoan (Leolbatan)		
35		Nitibe	Mahata-Kusi RE		9,0 Km	Lela-Ufe	Mahata	
36			Mahata-Kusi RE			Banafi	Kusi	
37		Nitibe	Nunhenu-Oelkaem PM		14,6 Km	Taiboco	Nemun (Upsena)	
38			Nunhenu-Oelkaem PM			Cunha	Nuapai	

## Annex 2: Sketches for Transport Survey locations

Maumeta-Fadablock Maintenance Road, 8.2 Km	Laulara-Ornai Rehabilitation Road, 5.5 Km
TS Location 1: 8° 40' 1.55" 125° 38' 44.65"	TS Location 1: S8° 36' 5828" E125° 34' 4.68"
TS Location 2: 8° 40' 23.82" S 125° 40' 37.84"	TS Location 2: S8° 36' 1372" E125° 35' 26.33"

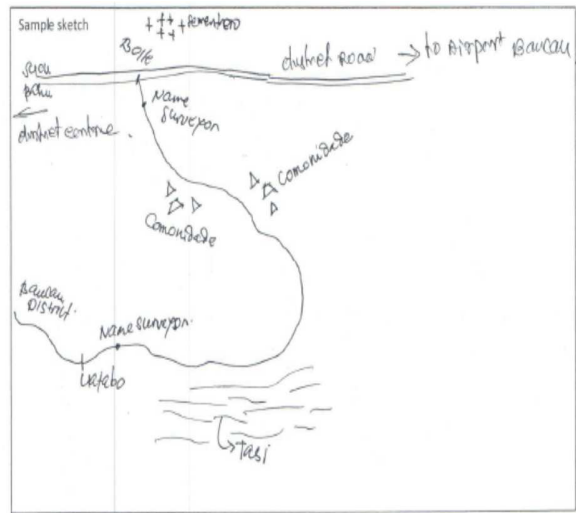
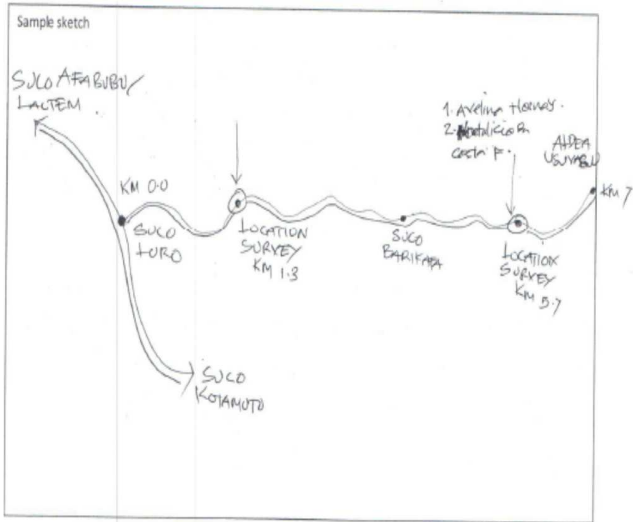


Sorelema-Fatisi Maintenance Road, 14.435 Km	Baguia-Larisula Rehabilitation Road, 8 Km
TS Location 1: S8°38'41.20" E 125° 32' 56.63"	TS Location 1: S8° 65' 73.82" E126°72'88.39"
TS Location 2: S8°36'51.90" E 125° 31' 45.73"	TS Location 2: S8° 63' 78.77" E127°67'80.86"

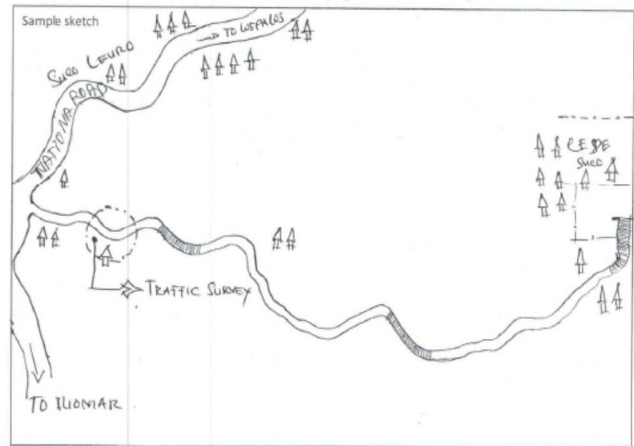
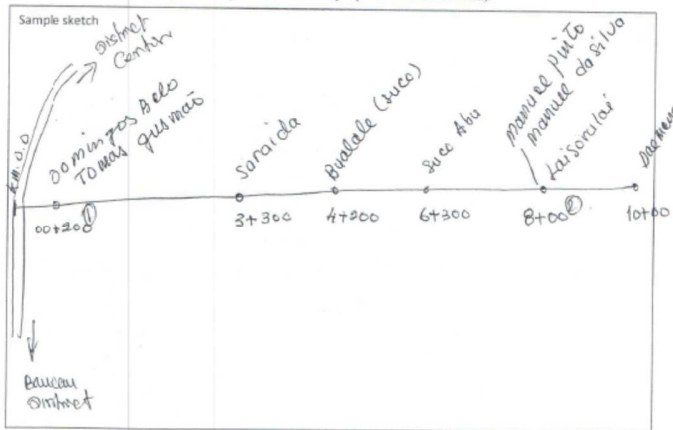




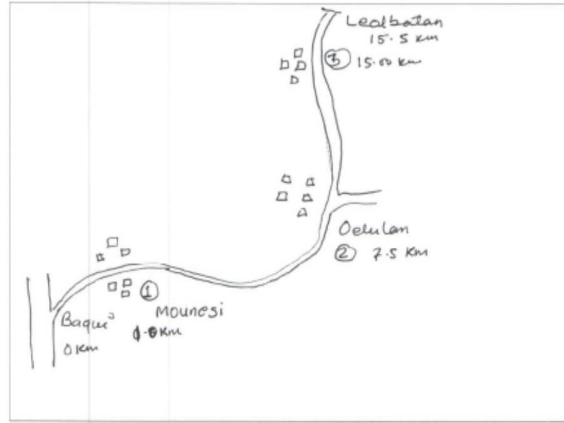
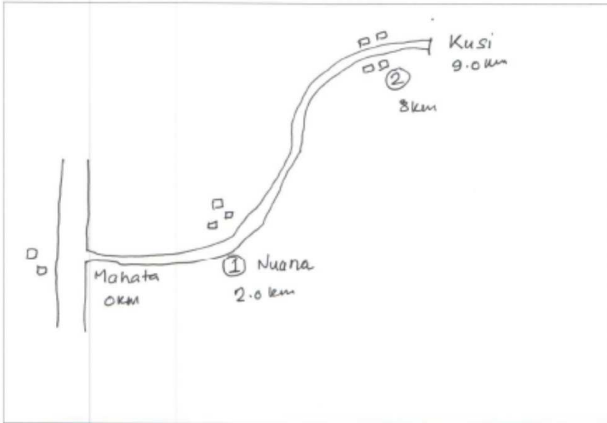
Luro-Baricafa Rehabilitation Road, 7Km	Boile-Uatabo Rehabilitation Road, 5.2 K,
TS Location 1: -8° 55' 38.50" E126°82'89.87"	TS Location 1: S8° 45' 49.43" E126°44'23.22"
TS Location 2: -8° 56' 93.71" E126°80'77.44"	TS Location 2: S8° 44' 16.10" E126°44'91.18"



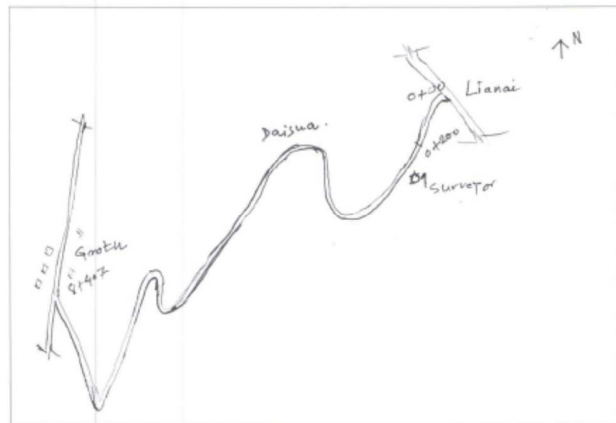
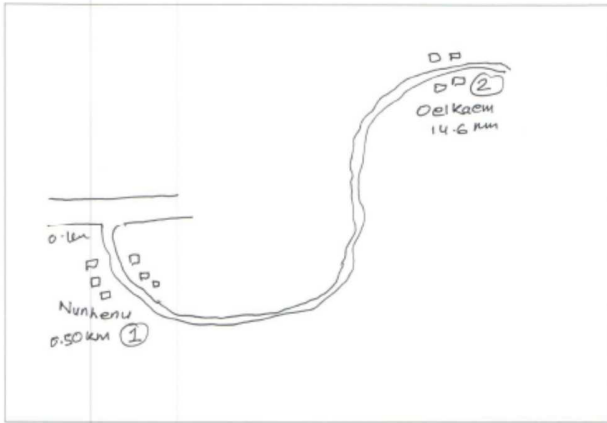
Quelicai-Laisorolai Maintain ace Road, 10.0 Km	Leuro-Sorulua Maintenance Road, 3.0 Km
TS Location 1: S8° 60' 48.12" E126°55'87.04"	TS Location 1: S-8° 53' 72.18" E126°91'25.64"
TS Location 2: S8° 65' 60.17" E126°53'66.08"	



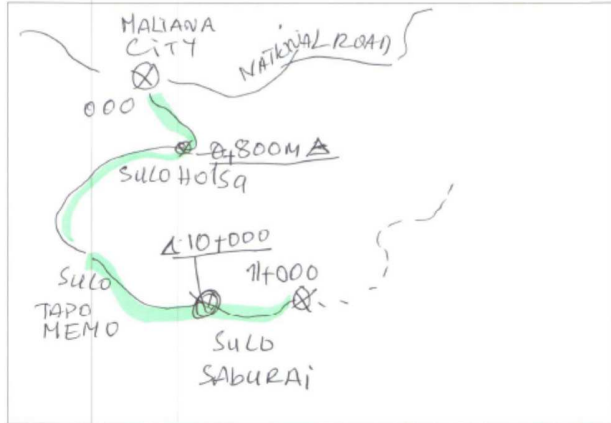
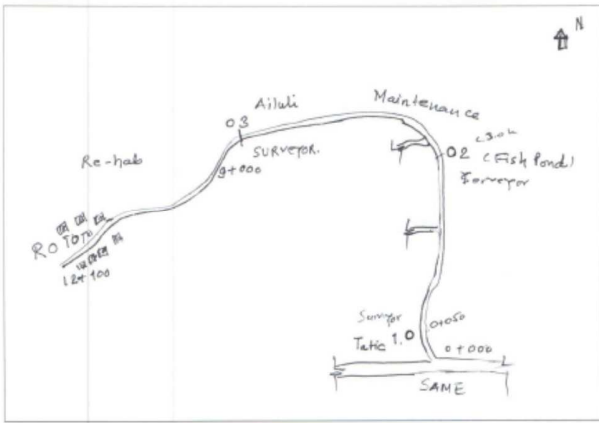
Mahata-Kusi Rehabilitation Road, 9 Km	Baqui-Leolbatan Rehabilitation Road, 15.5 Km
TS Location 1: S 9°24'33,47" S & 115°16' 15,36" E	TS Location 1: 9°17'43,57"S, 124° 22'25,36"E
TS Location 2: 9°23' 6,47" S & 124°15' 5,84" E	TS Location 2: 9°19'9, 94"S, 124° 24' 10,05"E
	TS Location 3: 9°18'10.58S, 124° 26 104.09E



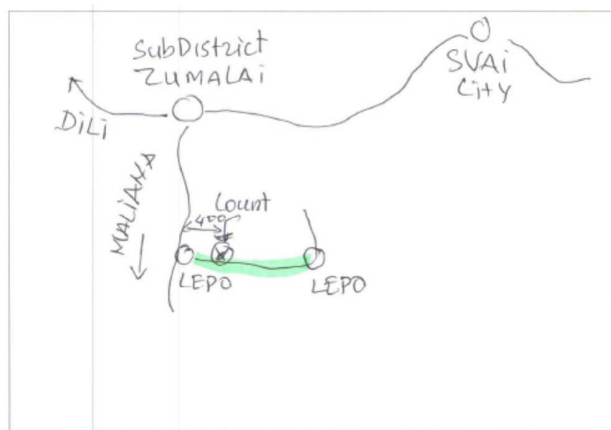
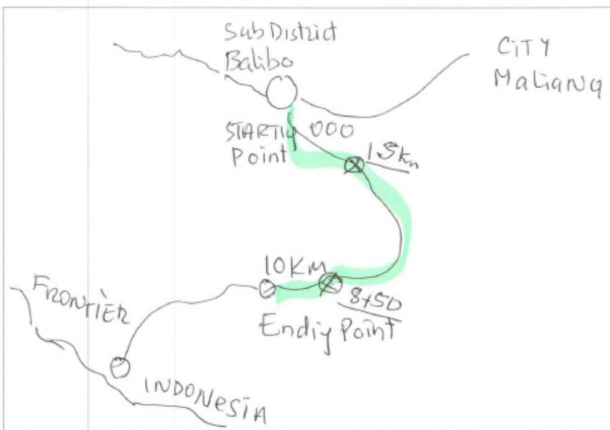
Nunehu-Oelkam, 14.6 Km	Lianai-Grotu Rehabilitation Road, 6.3 Km
TS Location 1: S 09°18' 35,8" E 124°16' 16.11"	S09°00. 750" E125° 37. 522"
TS Location 2: S 09°16' 41,75" E 124°20' 13.45"	



Same-Rotuto Rehabilitation and Main Road	Maliana-Saburai Rehabilitation Road, 11 Km
TS 2: S 08°59.912' E 125°38.894'	
TS 3: S 08°58.354' E 125°36.029'	

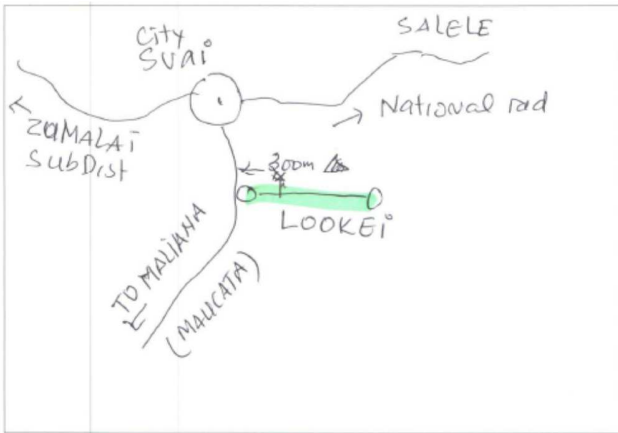


Balibo-Cowa Rehabilitation Road, 10.0 Km	Lepo-Leur Rehabilitation Road, 3.0 Km
--	---------------------------------------



Lookeu Rehabilitation Road, 3.0 Km

Ritabou Mantainance Road, 2.0 Km



## Annex 3: Aldeia Community Snapshots Questionnaire

### **MEN FOCUS GROUP DISCUSSION** **COMPLETE QUESTIONNAIRE WITH PEN (NOT WITH PENCIL!)**

#### **A: GENERAL INFORMATION**

1. Name Enumerator: ..... Position: .....
2. District: .....
3. Sub-District: .....
4. Suco Name: .....
5. Name of the Road: .....
6. Name of the Aldeia: .....
7. Place of the meeting of the FGDs within the Aldeia:.....
8. Location of the Aldeia along the road

- Within first 1/3<sup>rd</sup> from the start of the Road   
Within second 1/3<sup>rd</sup> from the start of the Road   
Within third 1/3<sup>rd</sup> from 3/3<sup>rd</sup> of the Road

9. Date Community Snapshot:  
..... (dd/mm/yy)

Time: from ..... to .....

10. Type FGD: 10.0  Baseline; 10.1  End-line year 1; 10.2  End-line year 2  
(Tick what is applicable)

11. Names Participants in Community Snapshot – Focus Group Discussion (for guidelines regarding the selection of participants, see “Guidelines Enumerators Aldeia Community Snapshots”):

	Name	Type of Employment (See coding)	Worked on R4D? (only to fill for end-line surveys)	
			yes	no
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

**List of coding**

- A. Agriculture
- B. Business
- C. Laborer
- D. Student
- E. Housewife
- F. Civil Servant
- G. Others

**B: INFORMATION ON ROAD WORKS AND MAPPING OF LOCAL SERVICES/FACILITIES (Baseline ONLY)**

1. **Mapping:** Together with the participants of the FGD, **mark on the R4D road alignment map the following features** (for reference an example of such an alignment map is attached under section I of the questionnaire):
  - i. The rehabilitated road (use a marker of different color)
  - ii. The local road network in the area
  - iii. Rivers
  - iv. Critical sections not passable by motorized vehicles in the dry and rainy season
  - v. Most important social and economic facilities in the area (market, hospital/health center, school, water supply system etc.)
  - vi. Travel times to most important social and economic facilities in the area (including agricultural fields)
  - vii. If people know the distances, mention these on the map (to be checked by enumerators).

**C: QUALITATIVE BENEFITS AND RISKS FROM IMPROVED RURAL ROAD ACCESS**

1. Which **main benefits from improved rural road access** do you a)  **expect** or, b)  **have you experienced** (tick box at **a**) in case of Baseline Surveys and tick box at **b**) in case of end-line surveys. You can mention **up to 3** benefits (use the same coding as in question 2):

1. ....
2. ....
3. ....

2. Which of the following **benefits have you experienced from improved rural road access** (for *End-Line ONLY*)

Ref. Coding	Benefits	Answer		
		Yes	No	Don't know/No Answer/N.A.
1	Reduced travel times (Less time spent in travelling)			
2	Year-round motorable access of the road (Access to road in dry and rainy season)			
3	Reduced travel costs for people (Less money spent in travelling)			
4	Reduced costs of transportation for goods (Angunna, Mikrolet, Truck etc.)			
5	More consumer products available in local shops (More			



	products that you can find in local shops)			
6	More local shops available			
7	Increase in public transport facilities (More means of transport like mikrolets, taxis, minibuses etc.)			
8	Increase in travel by local people (More people are travelling)			
9	Increase in local transportation of goods, including agricultural products (More products, including agricultural products, transported on roads)			
10	Higher school attendance (More children going to school)			
11	Increase in visits of health center or hospital (More people going to the health center or hospital)			
12	Increase in the area being cultivated <b>because of an improvement of the rural road</b> (More plots being cultivated because of road improvement)			
13	Introduction of new types of businesses			
14	Increased income from agricultural/husbandry/fishery products sold to traders (more money received by selling agricultural/husbandry/fishery products to traders)			
15	Increase in sale of agricultural products in the local markets			
16	Improved access to drinking water (More access to drinking water)			
17	Increase in local ownership of motorbikes or cars (Households have more motorbikes or cars)			
18	Increase in number of visits by agricultural extension workers (More visits by agricultural extension workers)			
19	Increase in number of visits by health workers (More visits by health workers)			
20	Increased availability of ambulances (More ambulances)			
21	Decrease in operating costs of vehicles and motorbikes (Less money spent in repairing vehicles and motorbikes)			
22	Increase job opportunities (e.g. in agriculture, business, public transport)			
23	Increase in access to more agricultural inputs (seeds, fertilizers, agricultural tools etc...)			
24	Increase in the access to credit facilities (More access to places where you can borrow money, e.g. bank and MFIs)			
25	Increased security measures (increase in police travelling to the suco)			

3. Which **main negative impact from improved rural road access** do you **a)  expect** or, **b)  have you experienced** (tick box at **a**) in case of *Baseline Surveys* and tick box at **b**) in case of *end-line surveys*. You can mention **up to 3 risks** (please refer to list of codes below):

1. ....
2. ....
3. ....

**List of Coding**

A. More accidents

- B. Decrease of businesses along other roads in the local road network (Less businesses in the local road network like Kiosk, Warungs etc).
- C. More pollution (air pollution, dust pollution or noise pollution)
- D. Illegal logging
- E. Increased theft of agricultural crops, forestry products, animal husbandry
- F. Increase in crime in the area
- G. Others

**D. NUMBER OF MEANS OF TRANSPORTATION IN ALDEIA**

1. (If none, mark with 0; if don't know, mark with?)

	Type of Transportation in working condition	Number
1	No of trucks	
2	No. of angunnas	
3	No. of mikrolets	
4	No. of pick-up/cars	
5	No. of taxis	
6	No. of motorbikes	
7	No. of small/big tractors	
8	No. Horses	

2.

- 2.1 Did you know any woman owning a motorized vehicle before the road rehabilitation?      2.2 If yes, what kind?
- Yes        Motorbike
- No        Car
- Mikrolet
- Other

3.

- 3.1 Do you know any woman currently owning a motorized vehicle (End-line I and II)?      3.2 If yes, what kind?
- Yes        Motorbike
- No        Car
- Mikrolet
- Other

**E. ROAD ACCESSIBILITY**

1. Which transports have access to the rehabilitated/maintained road (*thick where appropriate*):

MODE OF TRANSPORT	BEFORE ROAD REHABILITATION		AFTER ROAD REHABILITATION	
	Rainy Season	Dry Season	Rainy Season	Dry Season
All vehicles (including trucks, angunna, buses etc.)				
4WD cars and motorbikes				

Motorbikes only				
Pedestrians Only				

## F: TRANSPORTATION TIMES, COSTS, FREQUENCIES AND MEANS OF TRANSPORT

1. What are **current average** travel times, travel costs and travel frequencies to economic and social facilities/services used by the people in the Aldeia:

No.	From the point of the road which is nearest to where most people of the Aldeia live TO: Name of Town/Place:	Unit	1. Local Market		2. Hospital		5. SIScA (Before)	
			<i>Rainy Season</i>	<i>Dry Season</i>	<i>Rainy Season</i>	<i>Dry Season</i>	<i>Rainy Season</i>	<i>Dry Season</i>
1	Travel time by motorized vehicle <b>(Complete only if this is the most common means of transport)</b>	Mnts						
2	Travel time by walking + motorized vehicle <b>(Complete only if this is the most common means of transport)</b>	Mnts						
3	Travel time people by walking (ONLY) <b>(Complete only if this is the most common means of transport)</b>	Mnts						
4	<b>Check of question 1 by enumerator (by motorcycle only)</b>	Mnts						
5.a	Average number of times that people go per week to the market	Times						
6	Travel cost for one person ONE-WAY <i>(Leave blank if there is not public transport on R4D road and if people walk to reach destination)</i>	\$						
7	Transport cost for renting an angguna to transport agricultural/livestock/other products (one way) <i>(Leave blank if not available)</i>	\$						
8	Transport costs for renting a truck to transport agricultural/livestock/other products (one way) <i>(Leave blank if not available)</i>	\$						
9	Transport costs for renting a mikrolet to transport agricultural/livestock/other products (one way) <i>(Leave blank if not available)</i>	\$						
	<b>From the point of the road which is nearest to where most people of the Aldeia live TO:</b>  Name of Town/Place:		3. Secondary School .....		3. Drinking Water Source .....		SIScA (After) .....	

	<b>Time and Unit</b>	<b>Unit</b>	<i>Rainy Season</i>	<i>Dry Season</i>	<i>Rainy Season</i>	<i>Dry Season</i>	<i>Rainy Season</i>	<i>Dry Season</i>
10	Travel time by motorized vehicle <b>(Complete only if this is the most common means of transport)</b>	Mnts						
11	Travel time by walking + motorized vehicle <b>(Complete only if this is the most common means of transport)</b>	Mnts						
12	Travel time people by walking (ONLY) <b>(Complete only if this is the most common means of transport)</b>	Mnts						
13	<b>Check of question 12 by enumerator (by motorcycle)</b>	Mnts						
14	Average number of times that people go per week:	Times						
15	Travel cost for one person ONE-WAY <b>(Leave blank if there is not public transport on R4D road and if people walk to reach destination)</b>	\$						

2. What are the mostly used means of transport for people of the Aldeia to go to the following places (*if walking first and then motorized transport write 10/.....*):

	<b>Place where people go</b>	<b>Mostly used</b>	<b>Codes for means of transport</b>
1	Church		1 Truck or Angguna 2 Mikrolet 3 4WD car or pick-up car 4 Car 5 Motorbike 6 Small tractor 7 Big tractor 8 Bicycle 9 Hand-cart 10 Walking 11 Horse 12 Other
2	Health Centre		
3	Hospital		
4	Most important local market		
5	Second most important local market		
6	District capital		
7	Drinking water source		
8	Agricultural land / productive land		
9	Primary school		
10	Secondary school		
11	Bank		

3. Information about access **to public transportation in the Aldeia**

How long does it take **by walk** from the Aldeia to reach the place where you take a public transport?

Minutes:  Within the Aldeia

- $x \leq 29$  minutes
- $30 < x < 59$  Minutes
- $60 < x < 119$  Minutes
- $x \geq 120$

4. Information about currently available public transportation in the area for to the 2 most important origin – destination routes (*thick where appropriate and complete only if public transport is available on R4D road*)

Most Important Origin – Destination Routes		No of trips per week by public transport providers ( <i>thick where appropriate</i> )	OJEK		MIKROLET		ANGUNNA		TRUCK	
			Before Road Rehab	After Road Rehab	Before Road Rehab	After Road Rehab	Before Road Rehab	After Road Rehab	Before Road Rehab	After Road Rehab
From Transport Stand along R4D road	To District town ( <i>Specify the name</i> ):	More than once a day								
		Once a Day								
		Four times a week								
		Three times a week								
		2 times a week								
		Once a week								
		Less than once a week								
		No public transport available								
From Transport Stand	To main market - <b>if not in District town and if not accessed by walk</b> ( <i>Specify the name</i> ):	More than once a day								
		Once a Day								
		Four times a week								
		Three times a week								
		2 times a week								
		Once a week								
		Less than once a week								
		No public transport available								

## F. MAIN SOURCES OF INCOME

Rank the 3 most important sources of income: (1 is the most important source of income)	<b>Coding for Sources of Income</b>
	A. Agriculture (for selling) B. Fisheries

1.		C. Forestry
2.		D. Local Businesses
3.		E. Coffee plantations F. Government Jobs G. Paid casual labour H. Social welfare pension I. Subsistence farming L. Other

## G. AGRICULTURE

### 1. Information about agricultural production

	Crops	Do you grow this crop for subsistence?		Do you sell this crop to the market?		How often do sell the product	
		Yes	No	Yes	No	Unit (e.g. weekly/ yearly)	No.
1	Paddy						
2	Corn						
3	Potatos						
4	Sweet potatos						
5	Coffee						
6	Casava						
7	Vegetables						

2.1 How much was your weekly average income from selling agricultural products before the road rehabilitation?  
.....US \$

2.2 How much is your weekly average income from the selling of agricultural products after the road rehabilitation?  
.....US \$

3.1 Was any agent/middleman coming to collect your agricultural products before the road rehabilitation?

Yes

No

3.2 If yes, for what product?

Coffee

Betel nut

Horticultural products

Other (specify which product: .....)

4.1 Is any agent currently coming to collect agricultural products?

Yes

No

4.2 If yes, for what product?

Coffee

Betel nut

Horticultural products

Other (specify which product: .....)

### INCREASE/REDUCTION OF PRICES

1. List the average prices for the following commodities that are sold in the local shops:

No.	PRODUCT	Unit (e.g. Kg, bag, pack etc.)	Unit cost (US\$) Before Road Improvement	Unit Cost (US \$) After Road Improvement

1	Rice			
2	Salt			
3	Pack of Cigarettes			
4	Coca Cola			
5	Gasoline			
6	Cooking Oil			
7	Coffee			
8	Sand			
9	Cement			
10	Indo-Mie			

## I. MAIN CONSTRAINTS TO ECONOMIC AND SOCIAL DEVELOPMENT

- List the three most important economic and social constraints that hamper local economic and social development (in decreasing order of importance):

*Note for Enumerator: Ask the question as open question and then fill in the appropriate Code*

Importance of Constraint (with 1 being the most important)	Constraint	Coding of Constraints
1		A: Lack of teachers B: Lack of schools nearby C: Quality of teachers D: Quality of schools
2		E: Lack of health facilities nearby F: Quality of health center G: Lack of doctor or nurse H: Quality of doctor or nurse
3		I: Lack of drinking water nearby J: Lack of electricity L: Condition local road network M: Lack of irrigation water N: Lack of good agricultural land O: Lack of seeds P: Lack of fertilizers Q: Shortage of local labour R: Lack of local market outlets S: Lack of public transport T: Lack of agriculture extension U: Diseases livestock V: Crop diseases W: Diseases fisheries X: Lack pesticides/insecticides Y: Other



## Annex 4: Local Business Activity Survey Questionnaire

1. Name Surveyor: .....
2. District: .....
3. Sub-District:.....
4. Suco: .....
5. Suco Code: .....
6. Road name:.....
7. Type FGD: 7.0  Baseline; 7.1  End-line year 1; 7.2  End-line year 2;  
(Tick what is applicable)
8. Name and type of businesses in the Suco (to be asked to BOTH Chef de Suco and Chef de Aldeia)

	1.Name of Shop Owner / Operator interviewed	2. Type of Business	3. Gender (M/F)	Coding for types of shops/Businesses	4. Total number in the Suco
1				A. Grocery Shop or Kiosk	
2				B. Car or motorbike workshop	
3				C. Agricultural products/implements shop	
4				D. Agricultural products processing business (e.g. mill)	
5				E. Restaurant, Cafe or Warung	
6				D. Motorbike sales shop	
7				F. Electronics/household items shope	
8				G. Furniture / wood processing shop	
9				H. Fuel sales shops or petrol station	
10				I. Street vendors	
11				J. Contractor	
12				K Public transport provider	
13				L. Factory	
14				M. Other	
15					

9. Key information about the volume of business for identified businesses and shops in the Suco

- The number of the business refers to the names of businesses mentioned under question 8  
*N.B.: In case of Baseline Surveys there is no change yet in the turn-over, product prices, number of customers, etc. and in that case the grey areas need not to be filled in.*

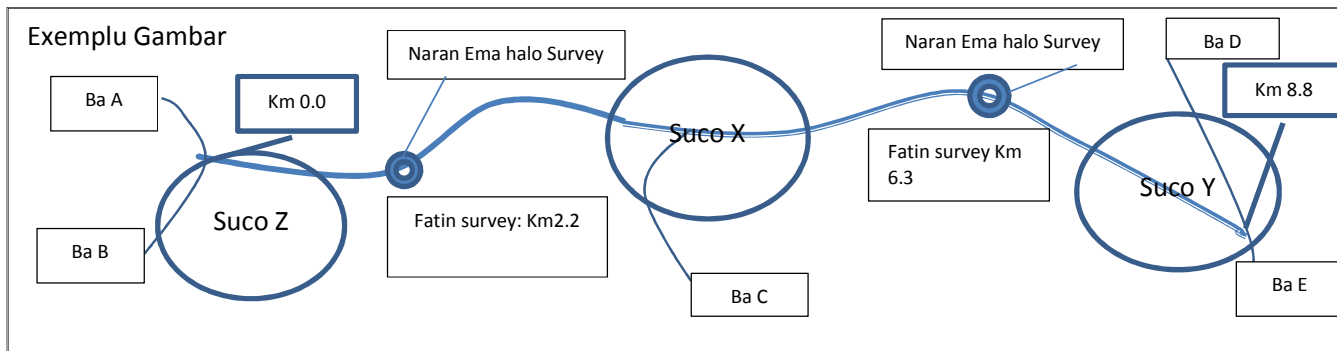
1. Business No.	2. Estimated revenue (rendimento) in US \$ per Week		3. How many costumers come to your shop weekly? (estimate)	4. Do you have any paid workers? (M/F)		5. Change in type of products or services provided by business/shop since road improvement?	6. Change in price of products or services in business/shop since road improvement	7. Change in number of costumers since road improvement?	8. If increase in costumers, what is the MAIN reason?	9. Did your business exist before the road's works started?	
	Unit	Turn-over	Number	Yes	No	Coding: I: Increase; S: Same; D: Decrease; ?: Don't know; N/A: Not applicable			See list of Codes below	Yes	No
8.1											
8.2											
8.3											
8.4											
8.5											
8.6											
8.7											
8.8											
8.9											
8.10											
8.11											
8.12											
8.13											
8.14											
8.15											
8.16											
8.17											

**List of Codes for Column 8 of Question 9.**

- Shop has become more reachable for local people in the Aldeia (more customers are able to reach the shop because of improved roads)
- People have more money (social welfare pensions, increased agricultural products sold in the market etc.)
- People have more money because of the income earned by working with R4D
- More and/or cheaper products offered in the shop
- Other

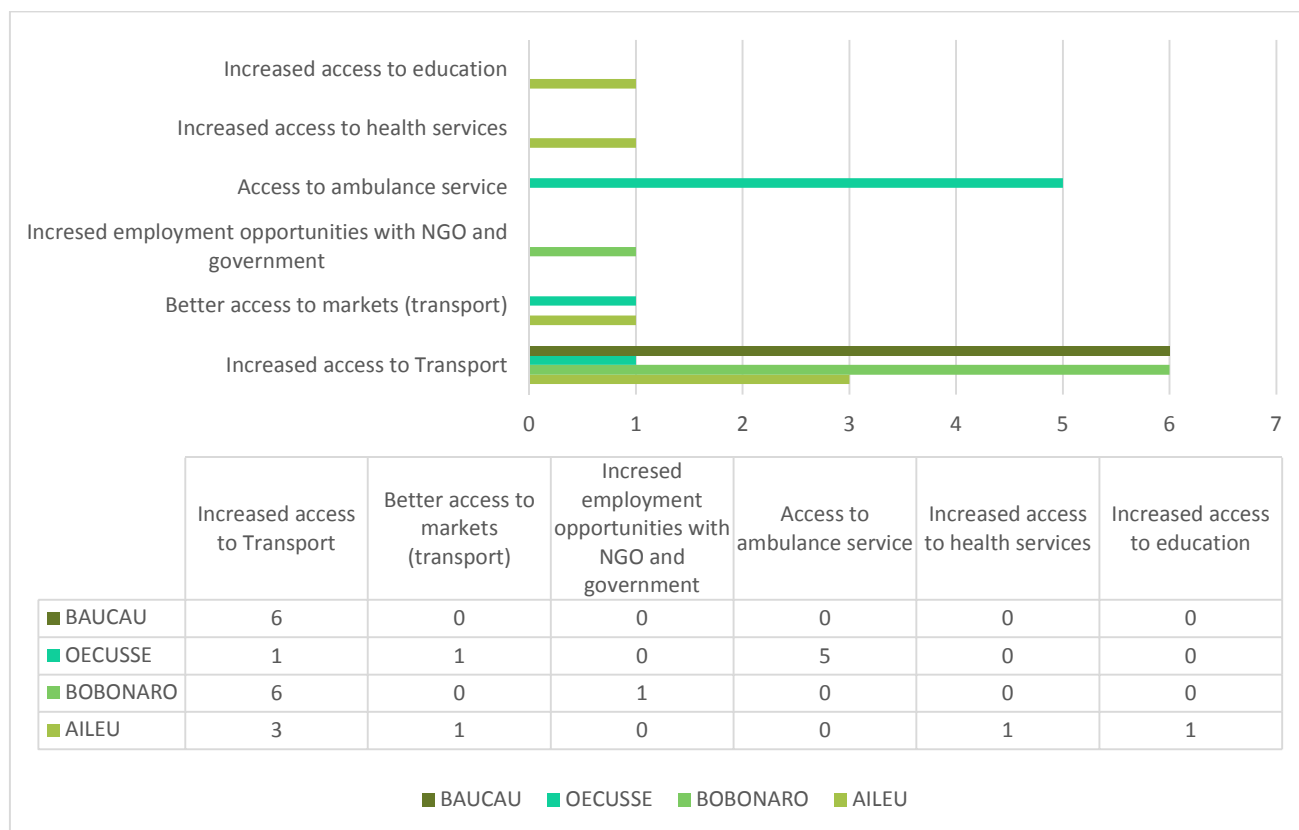
## Annex 5: Transport Survey Template

1. Naran ema halo survey:.....Posisaun:.....  
 Numeru HP:.....Asinatura:.....
2. Distritu: .....
3. Estrada nia naran: Pontu Hahu:.....Pontu Remata:.....Narok:.....
4. Data komesa servisu Estrada:.....(loron//fulan/tinan) 4.1 Atual  4.2 Planeadu
5. Data remata servisu Estrada.....(loron//fulan/tinan) 5.1 Atual  5.2 Planeadu
6. Fatin wainhira survey trafiku halao ba: GPS koordenasaun: .....
7. Tipu survey: 7.0 Baseline;  7.1 Linha-remata tinan 1;  7.2 Linha-remata tinan 2 ; 7.3 Linha-remata tinan3;(vistu pontu ne los)
8. Halo gambar hodi hatudu fatin nebe survey trafiku ne halao (halo gambar Estrada tomak no mos ligasaun ho strada/dalan fahe, strada local, fatin merkadu no strada ba distritu ou nasional. No mos marka parte nebe susar ou imposibel atu liu (tipu motorisada balun). Enjineiru Regional halo gambar ne iha surat tahan 1 (sheet 1) nia kotuk (adisionalmente tenke hasae foto).

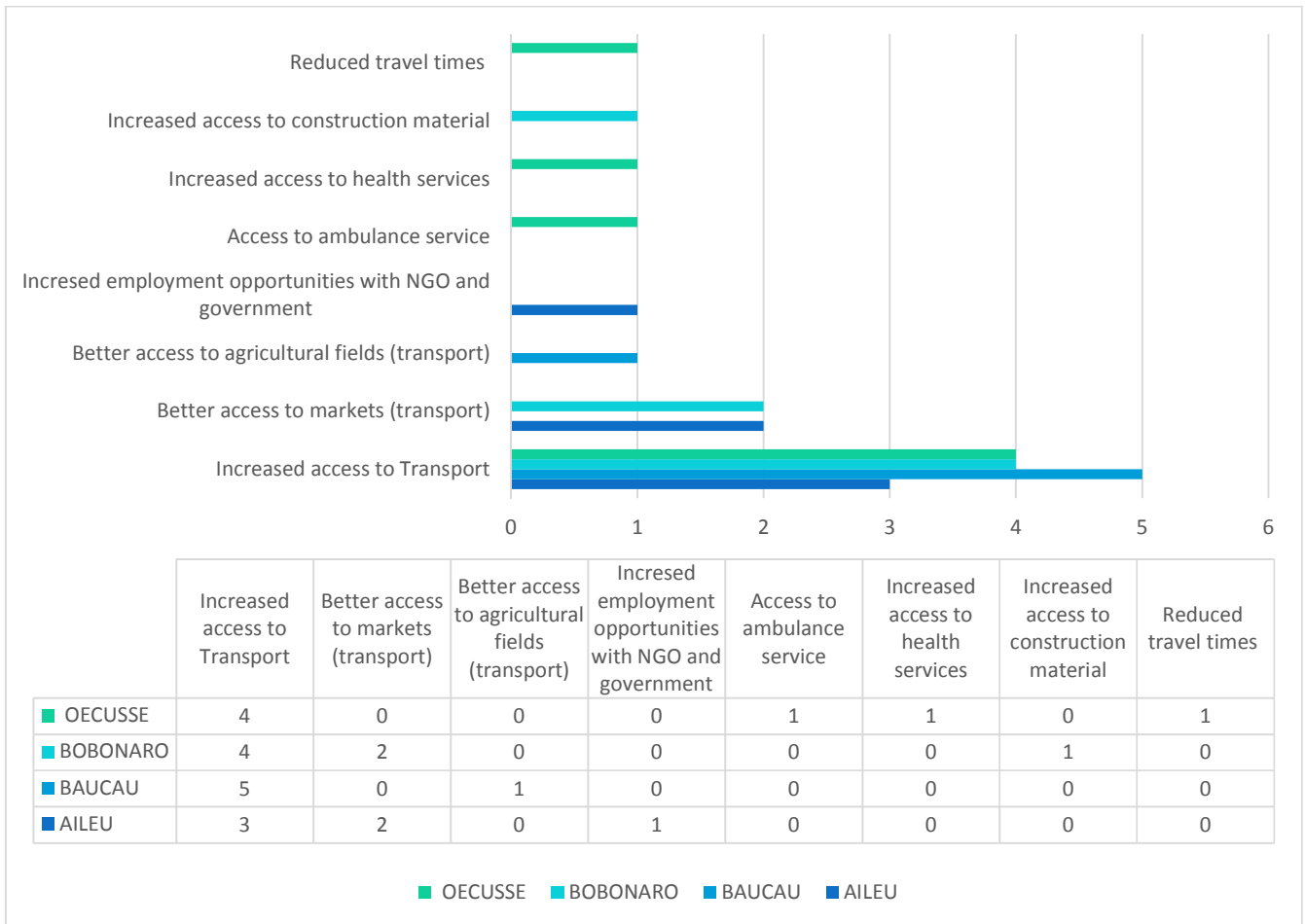




## Annex 6A: Main benefits experienced from improved road access by District – Women FGDs



## Annex 6B: Main benefits experienced from improved road access by District – Men FGDs



## Annex 7a: Changes in Income from Agricultural Production (USD) – Women FGDs

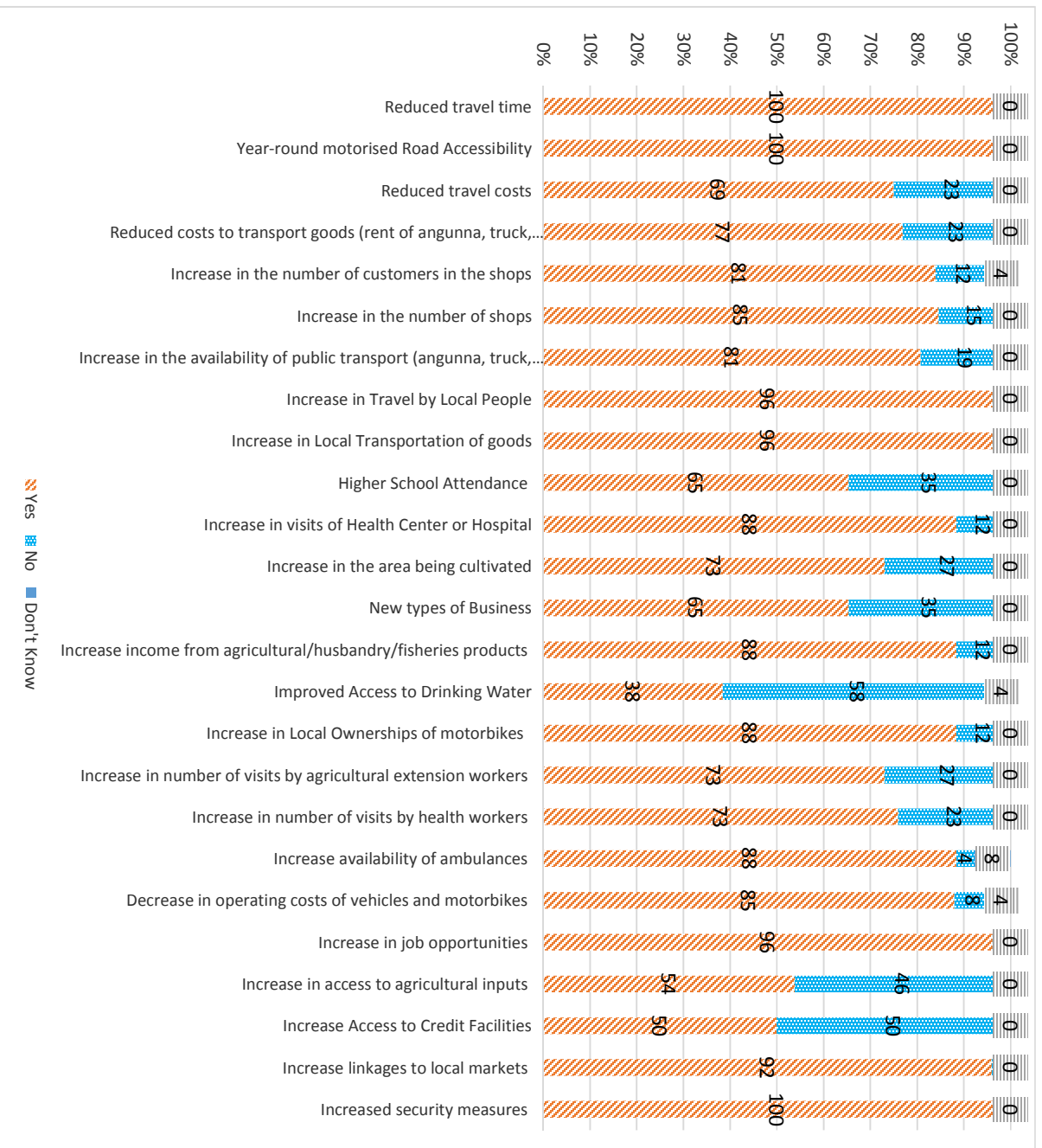
District	Suco	Road Name	Aldeia	Before Rehab (USD)	After Rehab (USD)	Difference (USD)
Aileu	Hautoho	Maumeta-Fadabloco	Lebutu	40	60	20
Aileu	Fahiso	Maumeta-Fadabloco	Mautoba	20	40	20
Aileu	Cotolau	Laulara-Ornai	Ornai	10	20	10
Dili	Dare	Laulara-Ornai	Sukalau	10	20	10
Aileu	Maumeta	Maumeta-Fadabloco	Tuqeu	20	40	20
Aileu	Fadabloco	Maumeta-Fadabloco	Lilitei	20	40	20
Bobonaro	Balibo Villa	Balibo-Cova	Fatuk Laran	5	20	15
Bobonaro	Cowa	Balibo-Cowa	Buai	15	20	5
Bobonaro	Holsa	Maliana-Saburai	Op-Legul	10	20	10
Bobonaro	Tapo Memo	Maliana-Saburai	Pin-Galak I	5	10	5
Bobonaro	Saburai	Maliana-Saburai	Taz Masak	15	20	5
Covalima	Debos	Lookeu	Lookeu	0	0	0
Covalima	Lepo	Lepo-Lour	Canua	15	25	10
Oecusse	Bobocase	Bihala Noesusi	Bihala	5	10	5
Oecusse	Banafi	Mahata-Kusi	Hautefu (Kusi)	10	20	10
Oecusse	Taiboco	Nunhenu Oelkaem	Nemun	10	15	5
Oecusse	Lelaufe	Mahata-Kusi	Mahata	10	40	30
Oecusse	Naimeco	Bagui-Oelulan	Boenmese	20	45	25
Oecusse	Costa	Oelulan-Leolbatan	Lakufoan	25	40	15
Oecusse	Cunha	Nunhenu - Oelkaem	Nuapai	25	40	15
Baucau	Alawa Kraik	Baguia-Larisula	Afaguia	20	35	15
Baucau	Larisula	AlawaKraik- Larisula	Baiyana	20	200	180
Lautem	Baricafa	Luro-Baricafa	Afaiya	20	200	180
Lautem	Luro	Luro-Baricafa	Abere	10	25	15
Baucau	Bahu	Boile-Uatabo	Boile	15	35	20
Baucau	Buruma	Boile-Uatabo	Tasi	10	25	15



## Annex 7b: Changes in Income from Agricultural Production (USD) – Men FGDs

<b>District</b>	<b>Suco</b>	<b>Road Name</b>	<b>Average Revenue Before Rehabilitation</b>	<b>Average Revenue After Rehabilitation</b>	<b>Difference</b>
Aileu	Hautoho	Maumeta-Fadabloco	20	60	40
Aileu	Fahisoi	Maumeta-Fadabloco	20	40	20
Aileu	Cotolau	Laulara-Ornai	20	40	20
Aileu	Maumeta	Maumeta-Fadabloco	10	20	10
Aileu	Fadabloco	Maumeta-Fadabloco	20	40	20
Baucau	Alawa Kraik	Baguia-Larisula	10	40	30
Baucau	Larisula	AlawaKraik-Larisula	20	35	15
Baucau	Bahu	Boile-Uatabo	40	250	210
Baucau	Buruma	Boile-Uatabo			0
Bobonaro	Balibo Vila	Balibo-Cova	25	50	25
Bobonaro	Cowa	Balibo-Cowa	10	15	5
Bobonaro	Holsa	Maliana-Saburai		15	35
Bobonaro	Tapo Memo	Maliana-Saburai		10	30
Bobonaro	Saburai	Maliana-Saburai	7	5	10
Covalima	Debos	Lookeu	10	20	10
Covalima	Lepo	Lepo-Lour	5	30	25
Dili	Dare	Laulara-Ormai	10	20	10
Lautem	Baricafa	Luro-Baricafa	25	30	5
Lautem	Luro	Luro-Barikafa	21	30	9
Oecusse	Bobocase	Bihala-Noesusi	15	30	15
Oecusse	Banafi	Mahata-Kusi			0
Oecusse	Taiboco	Nunhenu-Oelkaem	10	20	10
Oecusse	Lelaufe	Mahata-Kusi	10	15	5
Oecusse	Naimeco	Baqui-Oelulan (Rehab)	15	35	20
Oecusse	Costa	Oelulan-Leolbatan	15	20	5
Oecusse	Cunha	Nunhehu-Oelkaem		25	25

## Annex 8a: Other Benefits Experienced by Men from Road Improvements



## Annex 8b: Other Benefits Experienced by Women from Road Improvements

