

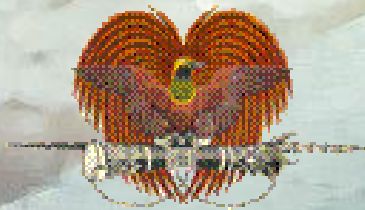
# The Socio-Economic Impact Study (SIS) of the World Bank funded Road Maintenance and Rehabilitation Project (RMRP)



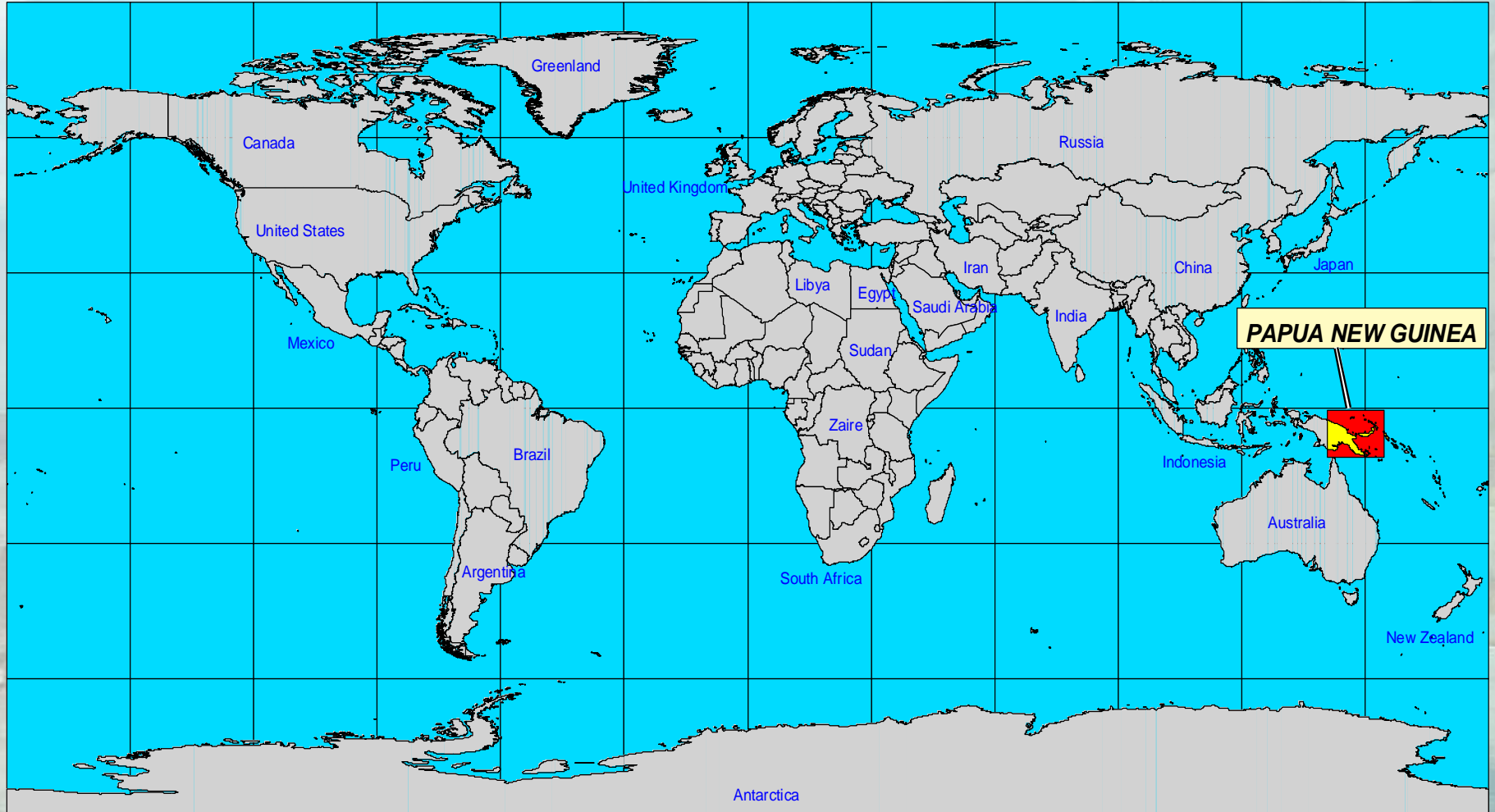
**XXIV World Road Congress  
Mexico 2011**

William Asigau,  
Manager

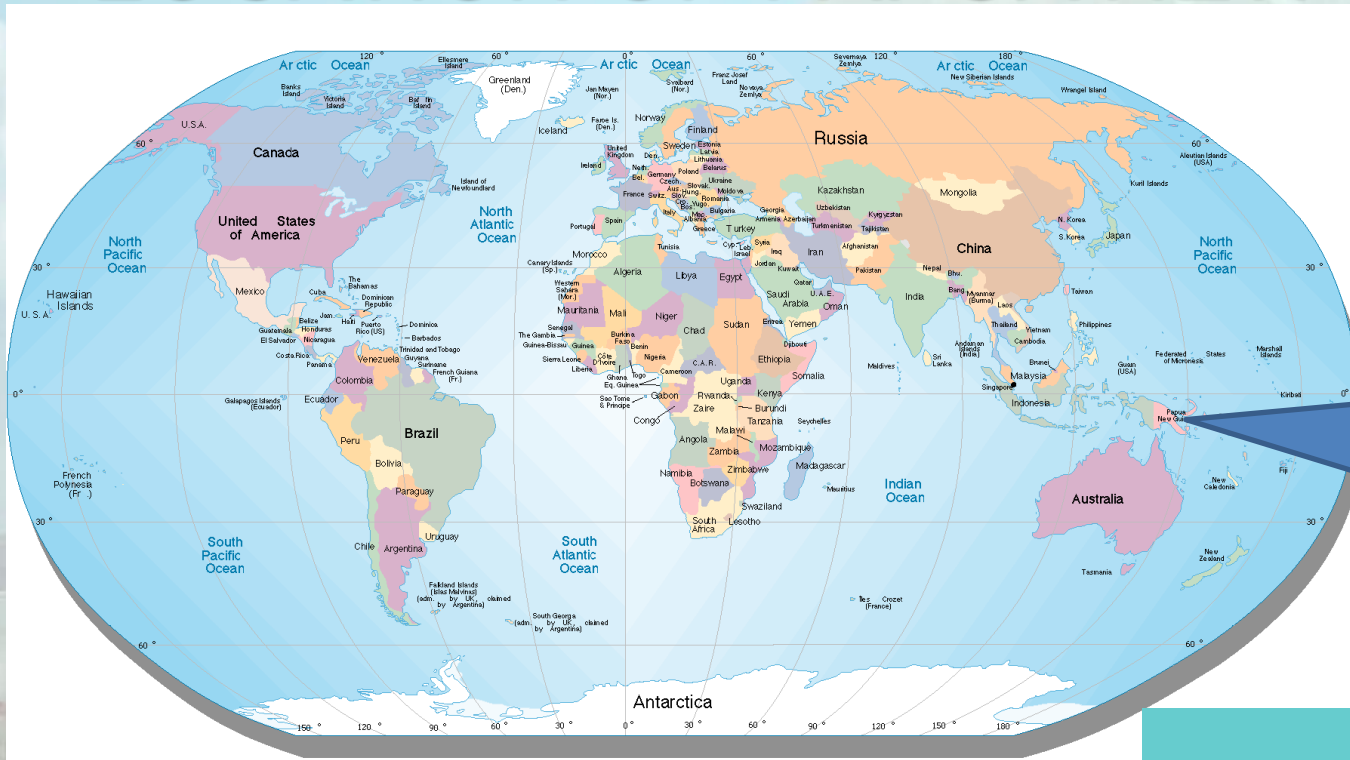
Environmental Management Unit  
Department of Works



# WORLD MAP



# LOCATION OF PAPUA NEW GUINEA



# 1. PAPUA NEW GUINEA COUNTRY PROFILE

## Location

- Located on the eastern half of the island of New Guinea and just south of the equator
- 160 km (main land) north of Australia
- Western Half of the Island is Irian Jaya, Indonesia

# PEOPLE, LANGUAGE AND RELIGION

- 6.5 million population
- Most of whom are Melanesians,
- Most heterogeneous country in the world
- 800 different languages
- English, Pidgin and Motu are three commonly used Languages Spoken
- Two thirds of the population are Christians



0 20 40 60 80 100 km

1:500,000

Scale 1:500,000

1:500,000

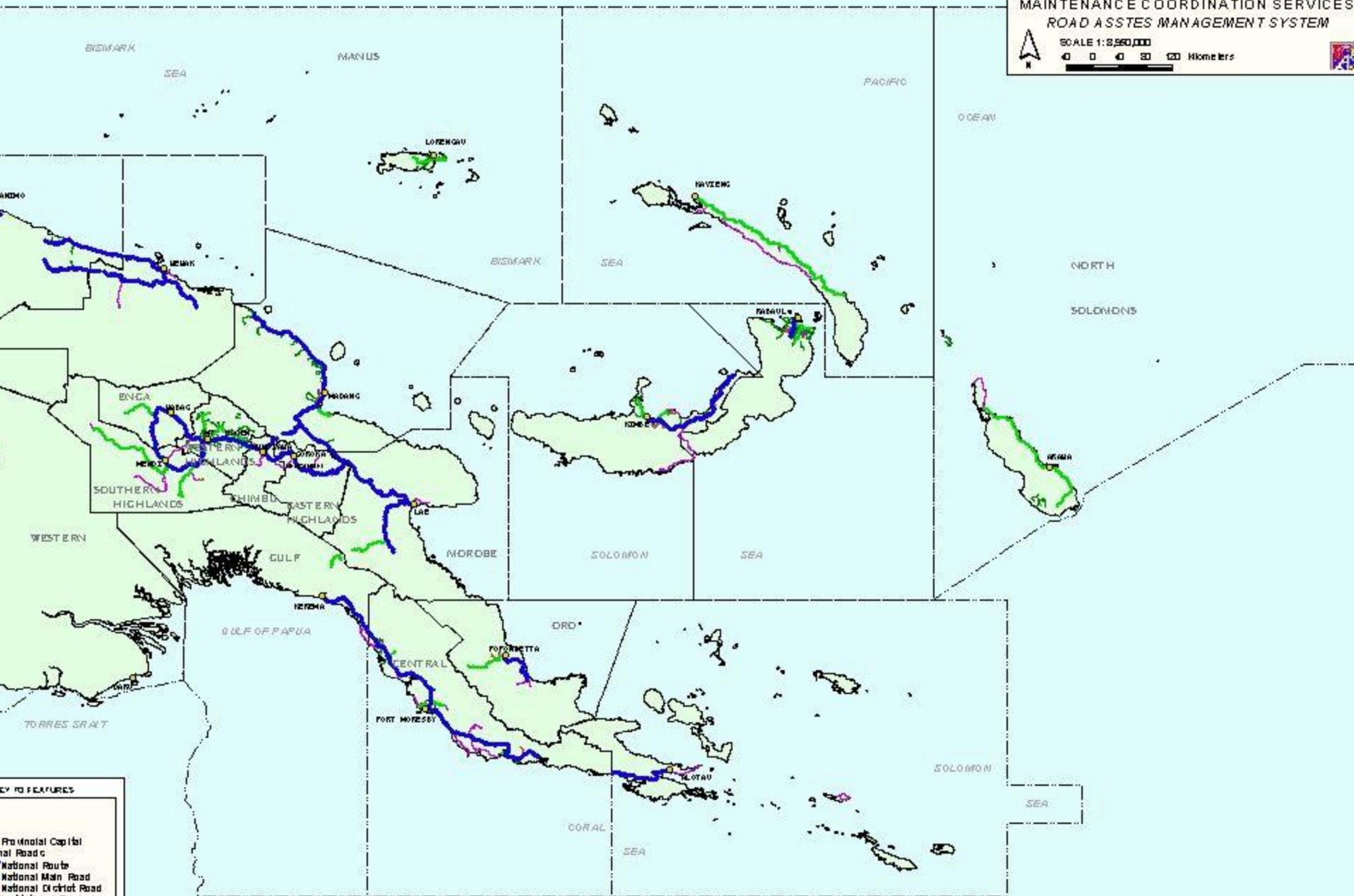
1:500,000

NATIONAL ROAD AND BRIDGE MAINTENANCE PROJECT

**DEPARTMENT OF WORKS  
OPERATIONS DIVISION**  
MAINTENANCE COORDINATION SERVICES  
ROAD ASSETS MANAGEMENT SYSTEM

SCALE 1:8,500,000

0 0 0 0 0 Kilometers



**KEY TO FEATURES**

- Provincial Capital
- National Road
- National Route
- National Main Road
- National District Road
- Provincial Road
- Provincial Road
- Provincial Boundary
- Landmark



## Papua New Guinea\_Road Statistic\_2010



## 1. Inventory

i. National Road Network = 8,738.48 km

## ii. Surface Type:

Sealed Road = 3,160.17 km

Unsealed Road = 5,558.30 km

PNG National Roads by Surface Type



## iii. Road Class:

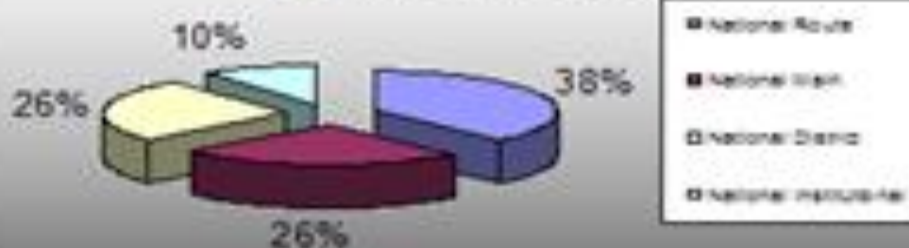
National Route = 3,335.50 km

National Main = 2,270.58 km

National District = 2,246.87 km

National Institutional = 885.53 km

PNG National Roads by Class



## 2. Condition

i. National Road Network = 8,738.48 km

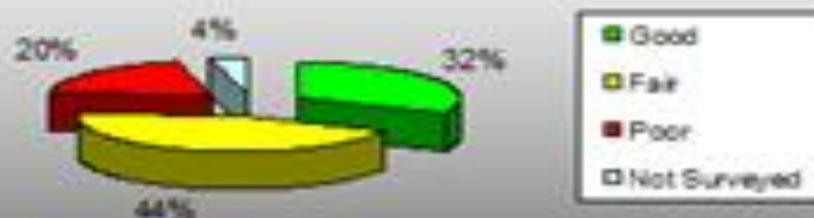
Good = 1,181.90 km

Fair = 2,384.57 km

Poor = 1,007.92 km

Not Surveyed = 506.92 km

PNG National Road Condition 2010

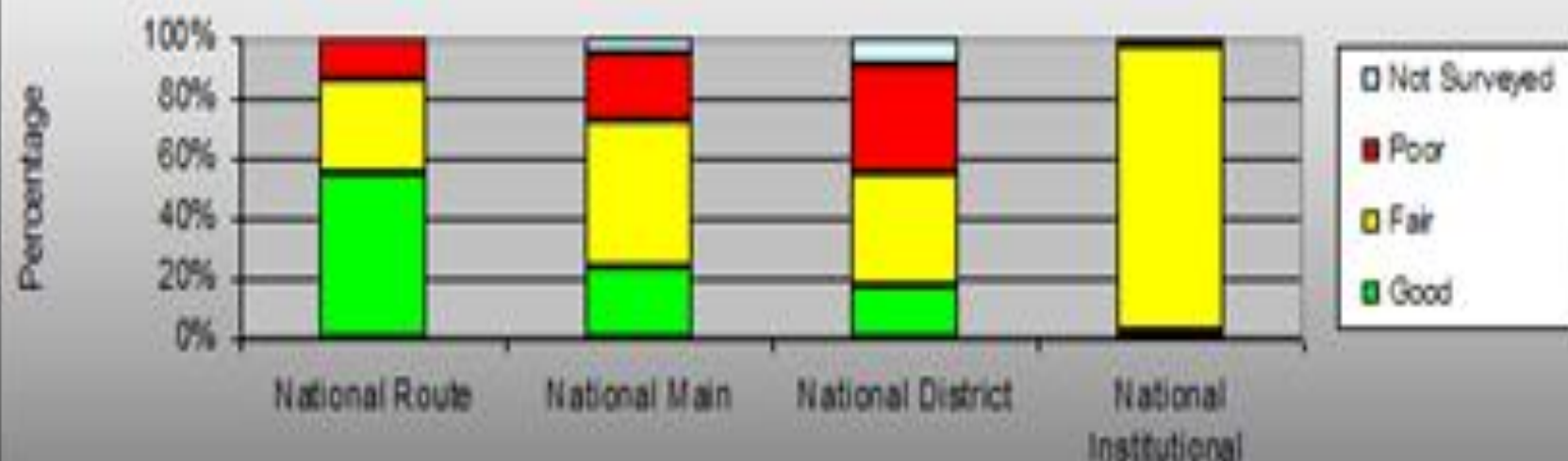




i. Road Class:

	Good	Fair	Poor	Not Surveyed
National Route =	621.90	380.45	237.65	73.72
National Main =	324.34	750.84	214.90	103.75
National District =	224.34	515.18	513.67	328.69
National Institutional =	11.32	738.11	41.71	2.76
<b>Total</b>	<b>1,181.90</b>	<b>2,384.57</b>	<b>1,007.92</b>	<b>506.92</b>

PNG National Roads Class by Condition



# The Road Maintenance and Rehabilitation Project (RMRP)

- **PROJECT OBJECTIVE:**

The objective of the project is to assist the Government of Papua New Guinea in promoting an efficient, safe and reliable roads transport system in the participating provinces through:

(a) the improvement of selected road segments;

(b) strengthening strategic planning and management of the road sector; and

(c) strengthening the institutional arrangements for road maintenance, including private sector participation

# The Road Maintenance and Rehabilitation Project (RMRP)

- **PROJECT COMPONENTS:**

- The above objective is to be achieved through the following six components:
  - (A) Maintenance and Restoration of National Roads;
  - (B) Maintenance and Restoration of Provincial Roads;
  - (C) Maintenance, Rehabilitation and Replacement of National Bridges;
  - (D) Maintenance, Rehabilitation and Replacement of Provincial Bridges;
  - (E) Implementation Support and
  - (F) Road Sector Support.

# Socio Economic Impact Study

- The Socio-Economic Impact Study (SIS) is under the Road Maintenance and Rehabilitation Programme (RMRP)
- The SIS Contract between Department of Works and Finnroad Ltd. was signed in 2004
- **SIS Study Objectives:**
  1. Ensuring that the stakeholders interests are clearly defined in the RMRP;
  2. Identifying positive and negative impacts caused by the implementation of the RMRP;
  3. Providing evidence of the RMRP's capacity to alleviate poverty;
  4. Measuring the effect of the RMRP on rural incomes;
  5. Assisting the Government Of Papua New Guinea to make rational decisions for the allocation of scarce funds for road rehabilitation and maintenance



# Project Phases

- Planning and Design Phase (November 2004 – March 2005), including training of Research Assistants
- Baseline Data Collection (March 2005-June 2005)
- Medium Term Data Collection, including Environment Report (March 2006-June 2006)
- Medium/Long Term Data Collection (March 2007-June 2007)
- Long Term Data Collection (September – November 2009)

# Impacts

- **Immediate impact** – the effect of employment during civil works and secondary jobs created for unskilled and semi-skilled labor during the works and ongoing maintenance activities.
- **Medium term impact** – resulting from the improvement created by the rehabilitation and maintenance of the roads. Bus travel times will decrease, bus-operating costs will decrease, and increased competition is likely, both because of improved equipment utilization and the likelihood of new entrants into the market
- **Medium to longer term impact** – resulting from improved access to human services, such as health care and education, provided by better roads.



# Selected Indicators for the Study

<b>Category</b>	<b>Indicators</b>
Livelihood patterns and income generation	economically active household members, types of markets visited and frequencies, market income, sold and purchased goods, household income and expenditure, financial needs, product prices, earnings from business
Access to social services and infrastructure	distance to nearest schools, cost of school trips, reasons for not attending school, distance to health centre, reasons for and frequency of visiting health centres, awareness of HIV/AIDS and risky behaviour, distance to nearest road, modes of transport, perceived road benefits, factors improving the quality of life
Poverty and vulnerability	households living below poverty lines, food security, household asset status
Environmental issues	noise, dust, water contamination, loss of animals/vegetation, clearing of the bush

# Indicators

- Travel time to nearest road which can be used by vehicle
- Frequency of road use, why
- Public Motor Vehicle fares, and number of trips made
- Travel to market, how often
- Income, divided for five categories
- Expenditures: divided for five categories
- Trade store prices
- Average market income
- Families below and above of poverty line
- Travel to health centers, how often, how long it will take
- Travel time to nearest school
- Information of accidents on the road
- Farming
- Food situation
- Environmental indicators: road side water quality, noise, dust, loss of animals/vegetation, increase in clearing the bush, impacts on gardening; and
- Benefits of the road improvement





# Survey Instruments

Formal household interviews utilized structured questionnaires as the main tool to collect data. In addition sketch maps for the sampled villages along with village profiles were completed.

Survey instruments used for the socio-economic impact study (SIS) included:

- 1. Household questionnaires**
- 2. Questionnaire for Trade Store Owners**
- 3. Questionnaire for Public Motor Vehicle Operators**
- 4. Village profile form**
- 5. Observations**



# Survey Instruments

- **Household Survey Forms:** Household surveys conducted by Research Assistants, collection of quantitative and qualitative data, form has questions related to all indicators used in the study e.g. incomes, expenditures, travel times to services, access to services, agriculture, environmental issues and HIV/AIDS awareness
- **Trade Store Questionnaires:** Information of where do they get their products and what are the costs for moving goods and the type of transportation used. Comprehensive collection of prices of products sold in trade store
- **PMV Operators Questionnaires:** Information of their vehicle fleet and transportation costs, information of their fares, amount of passengers, income, expenditures
- **Village Profile:** e.g. Population, number of males/females, number of households, language and cultural data, information of transport, economic data, land information and information of social services

# Checklist for the Study

Checklist of Socio-economic Impact Study		
1	Provincial Administration	Meet with Administrator and Provincial Works Manager.
2	District Administration	Courtesy call to District Administrator.
3	Local-level Government	Courtesy call to LLG President.
4	Ward Level	Meet with respective Ward Members for the sample and control villages.
5	Community Level	Meet with community leaders and organise meeting to brief the community about purpose of the survey.
6	Village Map	Prepare a sketch map with list of section names of the village with assistance from the Ward Member.
7	Household questionnaire	Complete 56 household questionnaires per village.
8	When Administering Questionnaires	Ensure to record village section name on the questionnaire for identification purposes.
9	Trade Store Operators	Administer at least two questionnaires for two trade store operators.
10	PMV Operators	Administer at least two questionnaires for two PMV operators.
11	School Data	Obtain enrolment figures from nearby primary school.
12	Health Data	Obtain records of common outpatient illnesses treated at nearby Health Facility.

# Household Survey Plan



# Project Provinces



Note. \* added to Project in year 2008

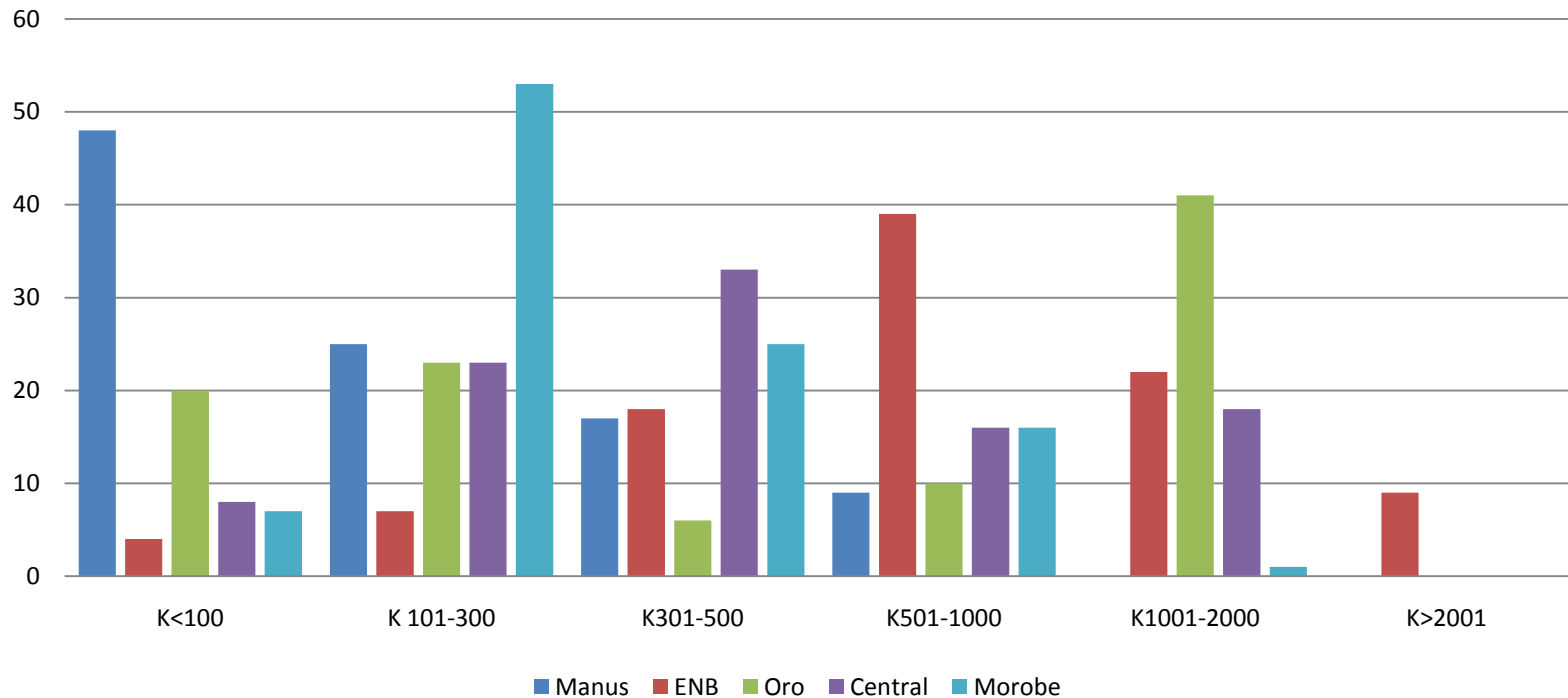
# Household Surveys

Province	Road	Sample	Control
Oro	Kokoda Highway	Ombisusu (54)	Evasusu (51)
Morobe	Bukawa Road	Tikeleng (54)	Musom Tale (56)
Manus	East West Highway	Rossun (31)	Bulihan (31)
Manus	East West Highway	Lundret (29)	Karun (21)
Central	Hiritano Highway	Veikabu (41)	Doramoku (16)
Central	Magi Highway	Saroa (60)	Londari (27)
ENB	Vunadirdir Road	Napapar 3 (28)	Liaga (24)
ENB	Vunadidir Road	Turagaunan (70)	Gunanur(72)
WNB	New Britain Highway	Karapi (39)	Gule (53)
WNB	New Britain Highway	Gigipuna (39)	Baia (42)
Gulf*	Kerema Malalaua Highway	Uriri (20)	Silo (47)
Gulf*	Kerema Malalaua Highway	Uamai (33)	Karama (42)
Western*	Kiunga Tabubil	Matkomnai (49)	Kasnerai (30)
Western*	Kiunga Kokonda	Seven Corner (15)	Bige (17)

Note. During the Project almost 3,500 household surveys conducted

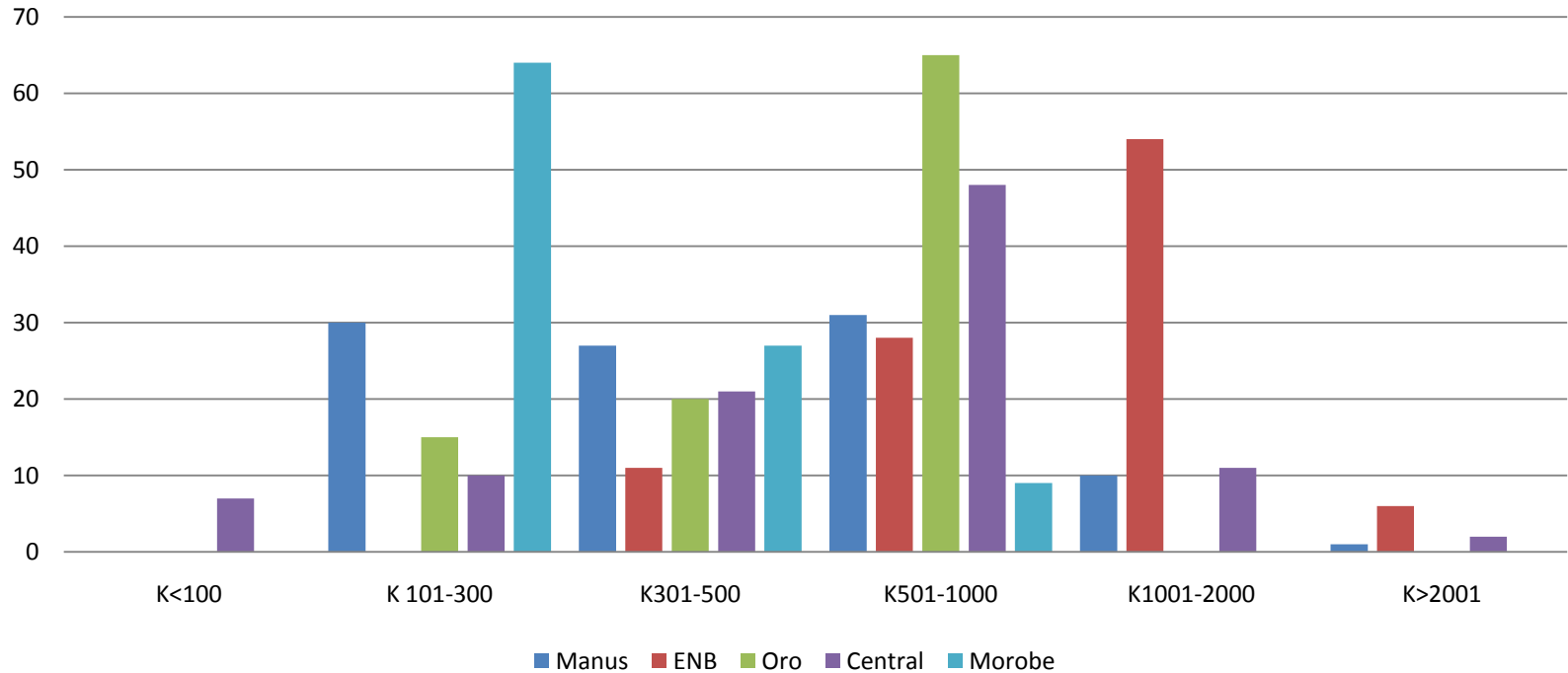
# Findings (Income )

**Income per Provinces  
Before Road Improvements  
% of Survey Households**



# Findings (Income )

**Income per Provinces  
After Road Improvements  
% of Survey Households**





# MARKET VISITS (East West Highway), Manus Province

- Although people are happy with the road rehabilitation, according to the respondents, it is not a reason for market trips. **People go to the markets to sell and get money to be able to cover their basic necessities and commodities, and cover the school fees.** “I only go to markets when there is a basic need in the house such as need for **salt, sugar, kerosine, soap or other store goods.**”
- However, whatever the reasons, **visits to markets have increased in all villages.** Also a single trip income and **monthly income from vegetable sales have increased in all survey villages.**

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Sapon	Sample	2.0	1.6	3.6
Bulihan	Control	1.5	1.5	3.2
Lundret	Sample	1.6	1.5	2.7
Karun	Control	2.3	1.6	3.6

# MARKET VISITS (Kiunga-Kokonda Road, Western Province)

- People pick up the rubber payments in Kiunga and at the same time food items are sold and needed store goods bought. **Otherwise vegetables are sold only when something is needed from the stores.** Visits to markets are said often to be done to cover school fees. There have been scarcely any changes in Bige while from Seven Kona all indicators show upward trend.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Seven Kona	Sample	1.05	1.4	1.4
Bige	Control	1.05	1.07	1.06

# MARKET VISITS (Tabubil-Kiunga Highway, Western Province)

- How often **people go to the markets depends on the availability of food to be sold but also to get income to cover especially school fees.** The visits to Kiunga are coinciding with the rubber payments twice a month. There has not been any increase in the number of trips from Matkomnai and scarcely any from Kasrenai despite the road rehabilitation.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Matkomnai	Sample	+-	1.2	1.25
Kasrenai	Control	1.05	1.15	1.2

# MARKET VISITS (Magi Highway, Central Province)

- In Saroa, the rehabilitation has helped, while in Londari people see no impacts caused by the rehabilitation on the market frequency: "Market trips are still difficult - once a month is adequate". However, the trips have increased. Also a single trip income and monthly income have increased.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Saroa	Sample	1.5	1.5	1.5
Londari	Control	1.5	1.4	1.7

# MARKET VISITS (New Britain Highway, West New Britain Province)

- From Gigipuna, there are **less visits** to Navo which is the nearest market place, but more visits to Bialla, and in **total visits have increased**. In Biala there are **no changes in visit frequency** but there is **increase in one trip income and the monthly income too has increased**.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Gigipuna	Sample	1,3	1.2	1.4
Baia	Control	+-	1.3	1.4

# MARKET TRIPS (Hoskins Road, West New Britain Province)

- Both from Karapi and Gule, **people travel more often to the markets; a single trip income has increased and the monthly income from vegetable sales has increased. All increases are contributed to the better road and better transportation**, even if people from Gule still have to use the feeder road to reach the main road and PMVs.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Karapi	Sample	3.4	1.6	1.9*
Gule	Control	1.2	2.0	3.3

# MARKET TRIPS (Vunadirdir Road, East New Britain Province)

- In Turagunan people go to the Kokopo and Tapipipi markets a little bit more often than before, have bigger one trip income and increased monthly incomes from vegetable markets. From Gunanur to Kokopo there are no changes but people go more often to Tapipipi.
- People complain about bad road conditions and especially about the feeder roads which hinder people to go to markets: “I go less often because of the bad road condition especially during rains”. However: “Road improvements or not, I have to go often to markets because I have to earn money for my family's survival”.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Turagunan	Sample	1.1	1.2	1.3
Gunanur	Control	1.1	no	1.03

# MARKET TRIPS (Vunadirdir-Kerevat-Vudal Road, East New Britain Province)

- On average, visit frequency to all the markets has increased, and single trip income and monthly incomes in all markets are now bigger.

		Frequency of visits	Single trip income	Monthly income
		Change - times more	Change - times more	Change - times more
Napapar3	Sample	1.3	1.2	1.5
Liaga	Control	1.6	1.3	2.5



# Public Transportation

A scenic view of a mountain valley. In the foreground, a paved road curves through a lush green valley. In the middle ground, a town with numerous buildings is visible, nestled in the valley. The background features large, rugged mountains under a blue sky with scattered white clouds.

- The rehabilitation of roads had **no observable reduction in Public Transportation fees**, which on average have increased 20-25 percent.

# Impacts on Access to Health Services

- The rehabilitation of roads has had **very little impact on the travel time to the nearest and most often used health services.**
- Either people have **services in their villages or their walk to the other villages**, but they **do not usually use the main roads**, but short cuts and bush tracts.
- From **18 villages people walk, less than half an hour** to access health facilities.
- From **3 villages people walk for about one hour**, although from **one village walking takes 2 hours** without the possibility to use Public Motor Vehicles.
- From **4 villages, people use Public Motor Vehicles** to reach the health services.

The rehabilitation of roads had a **positive impact on the Public Motor Vehicle travel times to access health services**, only ten percent of all health service visits are to the hospitals.

**Nobody mentions that they have no access to health services** because of the distance or costs.

# Impacts on **Access to Education Services**


- The rehabilitation of the roads had **no positive impacts on access to schools because the schools exist in the villages** or children walk to the schools in the near-by villages, using short cuts, bush tracks and river banks. **Only in three villages where children use the rehabilitated roads to walk to school.**
- For most, the **walking time is from a few minutes to about half an hour, but children from a few villages walk for more than an hour to schools.**
- The obstacles to education in some villages is **long walking distances** for small children, but the **shortage of money** to cover the **ever increasing school fees is seen by all the villages as major obstacle to education** for them.
- The lack of interest in education shown by **parents who do not see the importance of schools and education for their children** is a common problem.
- In some villages **children are needed to work on the family gardens and cash crop blocks and therefore have no time to go to school.**

# Impacts on POVERTY

- According to the responses, **very few households admit they are poor.** This is true because **many are self reliant on food gardens and have food security from their food gardens.** The **shortage of money** is seen as the **reason for their poverty** and not the lack of food, **“Food is no problem, the lack of money for school fees is an issue.”**
- Comparing the 2007 and 2009 data, **there was a decrease of the share of households below the poverty line,** from 57 percent to 40 percent, based on the monthly income of K500 or less.
  - In 2009 K500 poverty line became the line for severe poverty, because the new poverty line was at K800 monthly for household income.
- **According to this poverty line (K800) per month, 67 percent of the households were below the poverty line.**

# Impacts on **POVERTY**

- Only Manus Province, had more people above the poverty line (of K800) in 2009 than in 2007 (K500). In other provinces, only five experimental villages near rehabilitated roads, and one control village, had households under the poverty line than in 2007.
- 
- The study shows that the villages by the **rehabilitated roads have better incomes and less poor, and have benefited more than the villages some distance away from rehabilitated roads.**
- The lack of feeder roads connecting into the Highways to give access to villages that are some distance away from the Highways are negatively affecting the people's lives and incomes.
- People are prevented from travelling to visit markets to sell their produce. In many cases village people are unable to sell cash crops anywhere because of the lack of accessible road.
- **This study found that the number of poor people (families) had increased in areas where there was no Road Improvements.**

An aerial photograph of a winding asphalt road that curves through a valley. In the distance, a town or village is visible, nestled in the valley floor. The surrounding landscape is hilly and appears to be a developing region. The sky is bright with some light clouds.

**IT IS CLEAR, BASED ON THIS STUDY,  
THAT GOOD ROADS ARE  
NECESSARY FOR SOCIO- ECONOMIC  
DEVELOPMENT FOR THE LESS  
PRIVILEGED MAJORITY IN  
DEVELOPING COUNTRIES.**