

# Senegal - Roads Rehabilitation 2012

Rapport généré le: April 28, 2016

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# Aperçu

## Identification

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**ID**  
SEN\_2012\_MCC-RR\_v01\_M

## Version

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### DESCRIPTION DE LA VERSION

Anonymized dataset for public distribution

## Aperçu

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### RÉSUMÉ

The road sector plays a critical role because 99% of goods produced in Senegal are transported by roads. Because the elected segments of RN 2 and RN 6 have a commercially and politically central geographical location and because of their poor initial state their rehabilitation should have a detectable positive effect on local populations (column 3, 4 and 6.) Implementers rehabilitate the road segments of RN2 and RN6 under the supervision of MCC and MCA (Activities). The byproduct of the activities performed is the rehabilitated roads: 120 km and 256 km of rehabilitated RN2 and RN6 road segments, respectively (Outputs). Note that unexpected delays in the implementation have occurred because of environment factors, such as extreme weather and civil unrest. These contingencies can prevent the timely rehabilitation of the roads. There may be other factors that affect the road rehabilitation project. For example, there could be cost overruns that reduce the length of roads that end up being rehabilitated (outputs), thus affecting fewer beneficiaries than planned (outcomes).

Some outcomes may be realized immediately upon completion of the project, while others may take longer to materialize. Once the road rehabilitation implementation is complete, it is expected that the time and cost required to travel to a certain destination via the rehabilitated roads will be reduced. Also, the targeted road segments will be improved in quality and are thus likely to be used more frequently. These outcomes are expected to be realized shortly after the completion of the roads (short-term outcomes).

The completion of the road rehabilitation is also expected to unlock economic and social opportunities for households and individuals using the road (medium/long-term outcomes). For example, the project may improve access to markets to buy and sell products. It may also be easier and cheaper to find inputs needed for production activities for both formal enterprises and household informal economic activities. Due to the reduced time and cost of travel on the rehabilitated roads, households may enjoy easier access to basic facilities such as schools and health centers. Furthermore, there may be more employment opportunities due to increased demand in markets accessible via the improved roads. Lastly, the value of land and assets along the rehabilitated roads is expected to rise as demand for the road use rises.

Research Question 1: Did the RRP reduce the travel time and costs to households/enterprises located near the rehabilitated roads?

Research Question 2: Did the RRP lead to increased work opportunities for employment and income among beneficiary households?

Research Question 3: Did the RRP lead to increased access to health and education services?

Research Question 4: Did the project affect business opportunities and enterprise revenues?

Research Question 5: What is the ex-post Economic Rate of Return (ERR) of the RRP?

Research Question 6: How are the benefits of the projects distributed among subgroups of the population such as gender, age and income?

Research Question 7: How do the long-term impacts of the road projects per dollar invested compare to other typical infrastructure investments?

### TYPE DE DONNÉES

Sample survey data [ssd]

## UNITÉS D'ANALYSE

Households and enterprises

## Couverture

### COUVERTURE GÉOGRAPHIQUE

Regional Coverage

### UNIVERS

Habitants and Enterprises nearby the Roads.

## Producteurs et sponsors

### INVESTIGATEUR PRINCIPAL

Nom	Affiliation
Impaq International	

### FINANCEMENT

Nom	Abbréviation	Rôle
Millennium Challenge Corporation	MCC	

## Production des métadonnées

### MÉTADONNÉES PRODUITES PAR

Nom	Abbréviation	Affiliation	Rôle
Millennium Challenge Corporation	MCC		Review of Metadata

### DATE DE LA PRODUCTION DES MÉTADONNÉES

2014-11-26

### VERSION DU DOCUMENT DDI

Version 1.1 (November 2014)

Version 2.0 (June 2015). Edited version based on Version 01 (DDI-MCC-SEN-IMPAQ-RRP-2014-v01) that was done by Millennium Challenge Corporation.

### ID DU DOCUMENT DDI

DDI\_SEN\_2012\_MCC-RR\_v01\_M

# Echantillonnage

## Méthode d'échantillonnage

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We use statistical power analysis to calculate the minimum sample size required to detect an effect of a given size. Identifying an appropriate sample size for our impact evaluation depends on various factors and assumptions, including a desired effect size, target power and significance level. For the desired effect size, we used information on the magnitude of benefits from the Beneficiary Analysis provided by MCC. The power of a statistical test is the probability of detecting a true effect when it truly exists. The significance level is the probability of falsely detecting an effect when it does not exist. We calculate the minimum sample sizes required to detect an effect of a given size for each of the combinations of the most commonly used power and significance levels. Using the present value of benefit stream as a share of annual income of about 10% and the per capita GNI of USD 820 in the ERR spreadsheet from MCC, we estimate that approximately of benefits are expected to be generated from the RRP per household for the first 5 years.

Using the least restrictive criteria for the power and test size (80% power and a 5% significance level), it was determined that we need at least 1,227 households in each of the treatment and comparison groups. Thus, the minimum total household sample size is 4,908 ( $=1,227 \times 4$ ). As mentioned, this is the minimum required sample size for the least restrictive assumption for power and test size. For more robust results, we would need larger sample sizes. However, given the trade-off between the statistical rigor and the budgetary constraints faced by MCA-S, we have selected the smallest sample size consistent with a rigorous impact evaluation.

Regarding the sample size requirement for the enterprise survey, in discussion with MCC and MCA-S, we concluded not to use the power analysis due to lack of information about the number of enterprises along the treatment and comparison roads. Instead, we relied on the input of MCA-S staffers who know about business conditions for enterprises along RN2 and RN6. We then proposed a survey sample of approximately 600 enterprises.

# Questionnaires

## Aperçu

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Baseline data have been collected using in-person interviews from households and enterprises located along the treatment and comparison areas. The baseline survey collected data on background characteristics and key outcomes of interest (income, use of the roads and various economic activities) for both household and enterprises. The survey instrument to collect household data was structured in several sections that collected the following information:

- § Demographic characteristics of household members
- § Employment and revenues of household members
- § Household food and non-food consumption (whether a household has consumed certain types of food and the frequency of purchase)
- § Salary and non-agricultural income of household members
- § Household assets (e.g., type of home, access to electricity, etc.)
- § Household members' use of the road, frequency of use, time and distance traveled to various destinations such as local market, communal market, school, health infrastructure and workplace
- § Agricultural/Livestock production and commercialization: amount of production realized and sold by crop

A separate questionnaire was developed to gather information on enterprises. This data collection effort is essential to gain a full picture of the impact of the RRP. The survey collected detailed information on the type of enterprise activities, the quantity of goods produced and sold, the costs related to the commercialization of goods and the purchase of raw materials, the size of the enterprises in terms of employees and capital equipment, revenues and use of the road in the same areas in which the heads of households were interviewed. In particular, the survey instrument to collect enterprise data was structured in several sections that collected the following information:

- § Information on the entrepreneur
- § Characteristics of the enterprise: e.g., primary activity, workers employed, mobile equipment and machinery (tractors, etc.)
- § Production and commercialization: e.g., the amount of sales from products and services, destination of products and services, use of the road to deliver the products/services, distance traveled on the road
- § Difficulties encountered in the entrepreneurial activity, including whether the enterprise has difficulties obtaining credit, recruiting personnel and difficulties related to the access of the road.

## Collecte des données

### Dates de la collecte des données

Début	Fin	Cycle
2012-05-01	2012-06-30	RN2 treatment and comparison segment
2012-10-01	2012-11-30	RN6 treatment and comparison road segments

### Notes sur la collecte des données

§ Data collection in the North (RN2 treatment and comparison segment) took place in May and June 2012.

§ Data collection in the South (RN6 treatment and comparison road segments) took place in October and November 2012.

### Questionnaires

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§ Employment and revenues of household members

§ Household food and non-food consumption (whether a household has consumed certain types of food and the frequency of purchase)

§ Salary and non-agricultural income of household members

§ Household assets (e.g., type of home, access to electricity, etc.)

§ Household members' use of the road, frequency of use, time and distance traveled to various destinations such as local market, communal market, school, health infrastructure and workplace

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### Enquêteurs

Nom	Abbréviation	Affiliation
Agence Nationale de la Statistique et de la Démographie	ANSD	

## Traitements des données

No content available

## **Evaluation des données**

No content available



## Description du fichier

## Liste des variables



# Documentation de l'étude

## Questionnaires

### RN2 Final Questionnaires

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Titre	RN2 Final Questionnaires
Auteur(s)	IPA
Date	2012-01-01
Pays	Senegal
Description	This folder contains the final household, community, and enterprise questionnaires used in the survey of the RN2 road segment.
Nom du fichier	RN2 Final Questionnaires.zip

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### RN6 Final Questionnaires

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Titre	RN6 Final Questionnaires
Auteur(s)	IPA
Date	2012-01-01
Pays	Senegal
Description	This folder contains the final household, community, and enterprise questionnaires used in the survey of the RN6 road segment.
Nom du fichier	RN6 Final Questionnaires.zip

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## Rapports

### Evaluation Design Report

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Titre	Evaluation Design Report
Auteur(s)	Impaq
Date	2012-03-01
Pays	Senegal
Nom du fichier	Revised_Senegal_Roads_DesignReport_12.03.29.pdf

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### Baseline Report

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Titre	Baseline Report
Auteur(s)	Impaq
Date	2014-12-01
Pays	Senegal
Nom du fichier	baselinereport-sen-roads-dec14.pdf

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