REDSO/WCA

PROJECT ASSISTANCE COMPLETION REPORT

FOR

MAURITANIA RURAL ROADS IMPROVEMENT PROJECT

(682-0214)

Date of Report: July 1993 PACD: March 31, 1991

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I. INTRODUCTION

The Mauritania Rural Roads Improvement Project was designed to provide increased access to the rural population of the Guidimaka and Gorgol Regions through construction of an all-weather transportation network that would facilitate agricultural production and improve access to markets and clinics in these regions. The $14.9 million project was funded by the Government of the Islamic Republic of Mauritania (GIRM) and USAID. The United Nations Development Program (UNDP) contributed administrative services and equipment.

The project began on September 30, 1982 and concluded on March 31, 1991. During the life of the project, it had produced a total of 233 km of new road; 164 drainage structures were built between the regional capitals of Kaedi and Selibaby; and the main road between Boghe and Kaedi, 100 km had been rehabilitated.

A socio-economic impact survey conducted towards the end of the program concluded that the project roads had a significant impact on the development of the regions within its zone of influence. The development of the roads was considered an essential element in stimulating economic development of the Guidimaka and Gorgol regions. The roads facilitated access to markets and provided the means of moving social services and agricultural inputs into the high-potential food production areas. The success of the program is further evidenced by its being used as a model for road construction in other African nations.

Program managers did, however, face numerous difficulties during project implementation including: tax exoneration from the GIRM was not secured until after the program began and this caused procurement delays and work cessation; unstable drainage structures required extensive repairs and additional funding; technical expertise for project implementation had been underestimated in the original project paper and supplementary staff had to be added; and the existing payment system proved inadequate to provide funds in a timely manner.

Early project evaluations identified an immediate need for program revisions. Major design assumptions were found to be invalid. These invalid assumptions included miscalculations concerning equipment, road availability, experience level of the construction staff, and acceptable design standards. The project was redesigned following an Inspector General's audit in July 1985, and the initial outputs were revised to reflect more realistic and feasible ones. Through extensive training of construction brigade personnel, the institution of work plans, and stricter performance monitoring, the program achieved positive results.

The project was amended four times: on August 30, 1984; May 29, 1985; May 14, 1986; and November 20, 1989. An in-house report was carried out in 1989 and a comprehensive program evaluation was submitted in January 1990.

Based on AID/Washington's decision to close-out the mission in Mauritania, a grant was awarded to the UNDP to manage and complete the project, which included finishing the road between Kaedi-M'Bout-Selibaby and restoring additional drainage structures. Following the June 1993 close-out of operations in Mauritania, project files were delivered to the REDSO/Abidjan office. This project assistance completion report was compiled from these documents.

II. CONTRIBUTIONS OF THE PARTIES

Individual contributions of the GIRM, UNDP, and USAID are outlined below.

GIRM

The GIRM contribution totaled $1.6 million in the form of counterpart funds generated through PL 480 Title II Section 206 local currency. Additionally, it made an in-kind contribution of $1.8 million in local salaries and equipment and made available its garage and workshop facilities.

The ouguiya (UM) generated from the sale of PL 480 commodities belonged to the GIRM but were used for activities mutually agreed upon by USAID. The GIRM's Food Security Commission coordinated the allocation process for the GIRM and expenditures were cleared with the Ministry of Planning and Employment.

United Nations Sudano-Sahelian Office (UNSO)

The UN provided $200,000 in administrative services to the project and provided equipment.

USAID

The initial Grant Agreement between the GIRM and USAID was signed for a total LOP funding of $5,291,000. Of this, $4,810,000 was from the Sahel Development fund (which was fully-obligated in FY 1982) and the rest was PL 480 funds. The project was later amended on May 29, 1985 to add an additional $6,000,000 Grant to increase the total life of project amount to $11,291,000. This was divided into four obligations: September 1982, September 1984, April 1985 and November 1986.

The USAID contribution covered: technical assistance, local construction costs, commodities for earthwork and drainage operations, training of Mauritanian counterparts and brigade personnel, and operating costs for the maintenance brigade.

III. IMPLEMENTATION

Project objectives were to be achieved through the following outputs:

Initially Planned Outputs

According to the original Project Paper (PP), the outputs for the Rural Roads Improvement Project included building an all-weather road from M'Bout to Selibaby and Gouraye and improving an existing section of the national highway network from Kaedi to M'Bout, for a total of 209 kilometers for the project.

These outputs were based on the following assumptions:

1) The United Nation's low-cost road construction design standards could be used for the AID-financed road segments;

2) The UN contractor's road building equipment was the right mix for building an all-weather road;

3) Construction equipment repair facilities were adequate;

4) The first 70 kilometers of the road from M'Bout towards Selibaby would be open for use by AID contractors to reach AID- financed road segments; and

5) The UN contractor's work force taken-over by the US contractor was adequately trained.

Revised Outputs

It became evident in June 1985 that these major project design assumptions were invalid. The United Nations Sudano-Sahelian Office's (UNSO) low-cost construction designs were not suitable for the AID-financed road segments. In fact, a road segment originally constructed by UNSO was later rehabilitated under the Rural Roads project. Moreover, not all of the UN's building equipment was useable in the construction of an all-weather road, and more suitable equipment had to be purchased using project funds. Construction equipment repair facilities were not adequate and also required project funds to make them operable. The first 70 kilometers of the road leading to AID-financed segments was in need of rehabilitation, and the UN contractor's workforce was not adequately trained. To correct project direction, the outputs were revised to reflect:

1. USAID's assumption of rehabilitation responsibility for UNSO's 70 km of road from M'Bout to Selibaby.

2. the deletion from the project plan of the furthest 46 km segment of road from Selibaby to Gouraye.

3. the addition of limited operational expense funding for three years of road maintenance after road construction.

4. a recognition that maintainable all-weather roads are built to significantly higher standards than those originally contemplated under this project.

5. a need to retrain the construction brigade.

Responsibilities

Day-to-day operations and project control was managed by the DPW, a department within the GIRM's Ministry of Equipment and Transport with organizational responsibilities including studies, construction, road maintenance, bridges, drainage structures, ports, airports and railroads. Yet the organization had neither personnel nor budgetary resources required to carry out its obligations without assistance. Financial assistance was provided by AID through a reimbursement system based on submitted vouchers.

This was the first AID project coordinated with the DPW. An appointed DPW Project Manager oversaw the project's in-house administrative matters; however, his frequent absences and unfamiliarity with AID procedures excessively delayed implementation within the DPW. These excessive delays, which interrupted project implementation, eventually led to AID's insistence on corrective measures. A project management office was added in the Department of Public Works to attend exclusively to Rural Roads Project matters.

On the USAID side, the Office of AID Representative/Nouakchott (OAR/Nouakchott) handled project management and provided general project monitoring and supervision. OAR/Nouakchott hired an expatriate project manager, a technician, and two local hire support personnel to work full-time on the project. They were paid out of project funds. This team budgeted for the project, reviewed requisitions and processed almost all project PIO/Cs and purchase orders (the original project paper contained no procurement plan).

To improve accountability of field operations, the GIRM hired an expatriate engineer as Chief of Base of the Public Works Maintenance Brigade in M'Bout in January 1987, on the condition that he be replaced by a Mauritanian engineer after a suitable training period. A Mauritanian was appointed as an assistant Chief of Base. A direct-hire civil engineer and a PDO were also added to the OAR/Nouakchott staff at this time. The engineer monitored the technical work of the contractor.

The maintenance phase of the project, which began in January 1987, was funded under a three-year FAR arrangement covering CYs 1987-1989. The FAR involved a total expenditure of $800,000 and covered all 333 km of road built or rehabilitated under the project. The agreement included an annual reassessment of maintenance operations to determine merit of renewal. Requests for payments by the COB were sent to the GIRM Project Manager, who then submitted a bill to OAR/Nouakchott.

The OAR/Nouakchott Project Officer made site visits to verify that work billed was performed satisfactorily and then monthly payments were made to the Secretary General of the Ministry of Equipment. Due to this lengthy procedure, advances were granted during the initial five months to assist the flow of funds. However, an accumulation of outstanding advances caused the procedure to be discontinued. Instead, payments were based on the invoice for actual work performed and billed by the GIRM.

Project Redesign

After the project was redesigned, contract performance was monitored more regularly through monthly and often bi-weekly inspections by OAR/Nouakchott and frequently by GIRM engineers. They reviewed on-site performance, monitored equipment, workshop, and warehouse operations. These measures were instituted to enforce compliance with the acceptable work standards outlined in the agreement. In one instance, OAR/Nouakchott rejected reimbursement for a poorly-executed road grading job stretching 60 km.

The Technical Assistance Contractor

Technical assistance for the project was awarded to Morrison-Maierle, Inc., under a $1.3 million contract. The contract stipulated the following functions: project planning, survey and design, organization of construction, inspection and monitoring of equipment maintenance, reporting, cost accounting, personnel supervision and training. Except for project procurement, the contractor was responsible for providing or managing virtually all project inputs. In practice the contractors also became design engineers, construction managers and supervisors.

Both the amount of work to be accomplished and the level of effort needed to accomplish it were underestimated in the original project design and contract. The level of effort required to carry out contract responsibilities increased from a total of 125.5 person months anticipated by the original design to 218.5 person months during implementation.

UNDP/OPE

The UNDP Office of Project Execution financed the first 70 km of road construction. Under the second phase, which was mainly financed by USAID with PL-480 counterpart funds, the UNDP handled the purchasing and accounting for local procurement. Based on AID/Washington's decision to closeout the mission in Mauritania, a grant was awarded to UNDP in October 1990 to assume management and completion of the project. Remaining activities included finishing the road between Kaedi-M'Bout-Selibaby and restoring the inadequate drainage structures.

In May 1991, after the UNDP informed OAR/Nouakchott that the project had been successfully completed, a letter was sent to the GIRM advising of the project closeout. Of the $43,770 provided by the GIRM, only $21,165 had been utilized, resulting in a residual balance of $22,405. These funds were used by the GIRM to continue road maintenance after the end of the project. Residual rural roads project commodities belonging to the project were turned over to the GIRM in September 1991.

OAR/Nouakchott advised the GIRM to keep project financial records for three years, and to make such records available at all reasonable times for inspection by duly authorized representatives.

Commodities

The OAR/Nouakchott's Supply and Management Office handled custom clearance of goods procured under the project in coordination with the GIRM. Tax exoneration had not been requested prior to commencement of the project, and this caused unnecessary delays and even work cessation at one point, when a lack of fuel caused the maintenance brigade to temporarily cease operations. A special fuel exoneration was supplied the next month, November 1987. The Council of Ministers did not approve full tax exoneration until seven months later.

The GIRM was compelled to institute a petty cash account for the Chief of Base following a continuing problem with the payment system. Funds were not readily available, and the COB had been forced to purchase critical miscellaneous supplies using personal funds.

Approval for special procurements was granted by AID/Washington to finance goods and services for routine maintenance of the roads not included in the original project budget. This included items such as replacement vehicles, parts, and communication equipment. All USAID-financed equipment and commodities became the property of the GIRM following the closeout of the project.

USAID Financial Inputs

A summary of project financial reports as of June 30, 1993 indicated the following:

Life of Project Funding	$11,291,000
Obligations to date	$ 9,464,861
Expenditures to date	$ 9,464,861

Thus, of the total project funds, $9,464,861 had been obligated and disbursed as of June 30, 1993. Unused project funds have been deobligated.

IV ACCOMPLISHMENT OF PROJECT OBJECTIVES

End of Project Status

After four PACD extensions, the program was considered to have been successful in achieving its revised goals. The explanations of the new PACD dates and explanations include:
1) extension until September 30, 1989, to compensate for the late start of the maintenance phase;
2) extension until April 30, 1990, due to administrative processing delays;

3) extension until September 30, 1990, to allow time to reach a resolution concerning future funding of the project; and 4) extension until March 31, 1991, to provide additional time to evaluate the UNDP take-over proposal.

At the close of the project, a total of 233 km of new road and 164 drainage structures had been built in the heart of the agricultural production area, and 100 km of road had been rehabilitated. This new system formed a link to Mauritania's national highway system. The socio-economic impact survey conducted in January 1989 registered increased commercial activity in the region as a result of increased transport of small livestock and cattle. The report noted also that villagers had constructed small connector roads to unite with the project one.

Road Reconstruction and Rehabilitation

The road construction phase was completed in December 1986, and the maintenance phase on all 333 km of road began one month later. In all project evaluations, construction quality was ranked highly. This was attributed to the retraining of the construction crew and the stringent monitoring of work performance.

During the initial maintenance period the roads were crowned, bladed or dragged each month to minimize corrugations. Prior to the start of each rainy season, drainage canals were cleaned and stream channels re-defined. At the end of the rainy season, the road was re-profiled, damaged gabions replaced, and all fordings were resurfaced with gravel. The maintenance repairs were reimbursed under the FAR arrangement.

Ninety percent of the 164 drainage structures built during the construction phase of the project were gravel fordings. Stream flows and heavy road usage during the first two years, which was higher than originally expected, and uncovered the instability of the soft fordings. Subsequently, these soft fordings were upgraded to hard, permanent fordings through the installation of concrete surfacing. Cut-off walls and erosion protection structures were added to specific areas; and selected sections of the road in high erosion areas were raised.

By providing stable drainage structures, long-term maintenance costs were reduced. It was estimated that maintenance for these improved roads would be $1000 per kilometer per annum, a low figure by industry standards.

Training

Thirty-five members of the original construction crew were retained by GIRM and USAID to form a maintenance brigade. They received classroom and on-the-job training in secondary gravel roads maintenance through the use of such methods as dragging, blading, surface replacement, gabion radiers, riprap placement, and stream alignment. Along with road maintenance methods, a key group of brigade members were instructed in the operation, maintenance, and care of road construction equipment.

The project had originally contemplated training 24 people from the DPW in construction planning and implementation, and in project maintenance; however, only five DPW engineers received training under the program. One of the engineers was selected to participate in a ten-month training program with the US Forest Service. The other four were assigned management functions with other road projects. Three engineers and technicians from other departments of the government were sent for road maintenance training in neighboring countries through another project in the OAR/Nouakchott's portfolio called Human Resources Development.

The renovated construction camp in M'Bout was used as the base for the road maintenance brigade. Repair and maintenance of equipment was carried out at the camp by brigade members, and maintenance supplies and spare parts for the equipment were stored there.

Project funds in the amount of $20,000 were used to procure training equipment and visual aids needed to rehabilitate a Ministry of Equipment training center in Nouakchott for equipment operators and maintenance mechanics. Local and overseas procurements were made for this center.

V. LESSONS LEARNED

Some weaknesses identified in program development that might help guide future endeavors include the following:

1. Invalid project design assumptions made it impossible for the project to fulfill the original outputs. Most of the original presumptions did not hold true, and the project had to be redesigned to achieve its objective. An additional $6 million of USAID financing was also required.

2. The original construction plans and specifications were not explicit or well-defined. During the project revision, this issue was addressed with a system, which included maintenance checks, monthly inspections, and written quarterly reports. All activities were outlined in a quarterly maintenance plan prepared by the GIRM Chief of Party and approved by the GIRM and OAR/Nouakchott engineers prior to work initiation.

3. The original project design did not anticipate the extent of technical expertise needed for the implementation of this large capital project. The project required extensive technical expertise and staff time that was beyond the scope of a small mission such as OAR/Nouakchott. The monitoring of the rural road project and smooth implementation required a direct hire engineer, a project development officer as well as a project officer. Such technical expertise was not added until the redesign stage.

4. This cost reimbursement project required an expeditious payment system, to avoid delays, work stoppage, and other difficulties. The USAID system for the payment of monthly invoices received from GIRM was not efficient, requiring almost 45 days to process vouchers.

5. Coordination with other donors in executing responsibilities proved to be critical to the success of the project. A series of periodic meetings with the GIRM and other donors in the transportation field greatly improved the total project outcome.

6. The importation of project commodities and the necessary tax exoneration for the items should have been negotiated and agreed upon in writing with all related host government agencies prior to grant agreement signing. A great deal of time and effort was lost by the Mission in trying to obtain tax exonerations after the fact.

7. Although the GIRM exhibited a sincere concern for road maintenance (it increased its budget from $2 million in 1986 to $3.8 million in 1990), project evaluators expressed concern that a long-term, fully-institutionalized system had not been developed by the GIRM. It was noted that a host government maintenance policy should have been included in the original agreement to guarantee a budget for long-term recurrent costs. The evaluation observed that 80 percent of GIRM's maintenance funds were used for sand removal on the national highways, leaving only 20 percent for road maintenance.