

**Chad: Guélengdeng-Bongor-Eré Road and Road Renewal in Ouaddai**

**Ex-post evaluation**

<b>OECD sector</b>	21020 / Roads and road traffic	
<b>BMZ project ID</b>	(1) Guélengdeng-Bongor-Eré Road, Investment in fixed assets EUR 47.2 million, BMZ ID 1990 65 392 (2) Road Renewal in Ouaddai, Investment in fixed assets EUR 4.6 million BMZ ID 1990 65 764	
<b>Project-executing agency</b>	(1 + 2) Direction Générale des Routes	
<b>Consultant</b>	(1 + 2) Rhein-Ruhr Ingenieur-Gesellschaft mbH	
<b>Year of ex-post evaluation</b>	<b>2005</b>	
	<b>Project appraisal (planned)</b>	<b>Ex-post evaluation (actual)</b>
<b>Start of implementation</b>	(1) Q1/1991 (2) Q1/1994	(1) Q2/1995 (2) 01/1995
<b>Period of implementation</b>	(1) 53 months (2) 28 months	(1) 72 months (2) 64 months
<b>Investment costs</b>	(1) EUR 43.1 million (2) EUR 5.5 million	(1) EUR 48.2 million (2) EUR 6.0 million
<b>Counterpart contribution</b>	(1) EUR 0.0 million (2) EUR 0.9 million	(1) EUR 1.58 million (2) EUR 1.5 million
<b>Financing, of which Financial Cooperation (FC) funds (in EUR)**</b>	(1) EUR 43.1 million FC/grant (2) EUR 4.6 million FC/grant	(1) EUR 47.2 million FC/grant* (2) EUR 4.6 million FC/grant**
<b>Other institutions/donors involved</b>		(1) 0.76 million ***
<b>Performance rating (phases 1+2)</b>	<b>2</b>	
<b>• Significance / relevance</b>	<b>2</b>	
<b>• Effectiveness</b>	<b>2</b>	
<b>• Efficiency</b>	<b>2</b>	

\* Remaining funds of EUR 1,34 million were used for the project "Labour-intensive Road Construction" (2000 65 276) in the Mayo Kebbi prefecture.

\*\* Remaining funds of EUR 0.1 million were used for the decentralised development project "Mayo Dala and La Kabbia" (2002 66 320).

\*\*\* Payment in the amount of EUR 0.76 million made by the building contractor for delays in construction, for which the contractor was responsible.

**Brief Description, Overall Objective and Project Objectives with Indicators**

(1) Guélengdeng-Bongor-Eré Road

The project comprises the upgrading of the approx. 165 km section between the capital N'Djamena and the industrial town of Moundou situated on the only north-south connection of the country into an all-weather road (total length of the road: 460 km).

The project objectives are the year-round passability of the road and the reduction in vehicle operating costs.

Indicators for the achievement of the project objective are the reduction of the number of traffic disruptions during the rainy seasons, the termination of the detour traffic across Cameroon and the reduction in vehicle operating costs.

The overall objectives are (i) an improvement of the economic and administrative links between the Mayo Kebbi prefecture and the capital N'Djamena, which were inadequate before the start of the project, (ii) a better supply of the population of N'Djamena with food and of the province with consumer goods and (III) the upgrading of the connection between N'Djamena-Moundou.

The indicator for the achievement of the overall objective was the number of vehicles using the road.

## (2) Road Renewal in Ouaddai

The project objective is to restore the year-round passability of the upgraded priority roads and to ensure the passability of the secondary roads in accordance with the volume of traffic.

The indicator for the achievement of the project objective is the frequency and length of traffic disruptions.

The overall objective is to ensure a minimum traffic connection of the Ouaddai region with other regions and to open up the Ouaddai region for traffic and, thus, to improve the safe and continuous supply of the population living in the region with goods.

The indicator for the achievement of the overall objective is the development of the traffic volume, which is planned not to fall below the level that existed at the time of the project appraisal (between 5 and 8 passenger vehicles per day).

## **Project Design / Major Deviations from the original Project Planning and their main Causes**

### (1) Guélengdeng-Bongor-Eré Road

The 165 km road section was upgraded as planned on the existing alignment into a bituminous road with a roadway width of 6 metres. Technical changes concern the crossing of the Logone river near the town of Eré. In order to ensure a continuous traffic flow a 480 m steel-reinforced concrete bridge was built across the river in order to replace the ferry, which could be used only during low-water periods. The contract for the construction of the road was awarded to a construction firm upon international competitive bidding. Due to major delays in the award of the contracts to the construction consultant and the construction firm the start of construction was significantly delayed by almost four years and the works started only in May 1995. Substantial planning deficiencies, staff fluctuation and organisational weaknesses on the part of the construction firm as well as bottlenecks in the supply of construction materials and the persistent country-wide fuel shortage led to further delays and downtimes. Finally, the project road was completed only in mid-2001 (plan: 1996). On account of the downtimes the construction firm made unacceptably high supplementary claims and instituted legal proceedings against Chad at the International Chamber of Trade in Paris. An amicable settlement was found with the support of international lawyers. Due to the delayed completion of the road the traffic was restricted and hampered for several further years, detours had to be made and this meant higher costs for road users.

### (2) Road Renewal in Ouaddai

At the time of the project appraisal the road renewal in Ouaddai had been planned as an FC/TC cooperative project. The TC component comprised qualification measures for the project executing agency, the regional road maintenance unit (OFNAR) in Abéché, which at the time was responsible for maintaining the regional road network, and consulting services. The planned FC component comprised the financing of the supply of construction materials, vehicles and equipment required for the work of OFNAR. After the dissolution of OFNAR in 1993 the project concept was altered in the course of the privatisation of road maintenance so that from then on contract for road construction works were awarded to private companies and financed

from FC funds. With the discontinuation of the TC component more FC funds were needed to finance consulting services and, thus, only two of the originally planned three priority roads in the region that had been envisaged for renewal could actually be rehabilitated (these were the 922 km section from Abéché to Biltine and the 146 km stretch from Abéché to Oum Hadjer). The third main section from Abéché to Adré (176 km) had to be dropped. Only selected rehabilitation measures were implemented on this third section and on the secondary road network (approximately 1,160 km). In accordance with the originally very low traffic volume on the two roads they were constructed as the most simple dirt roads with a width of 3,5 metres. Still, these roads provide a minimum connection to the traffic in the region and in particular ensure the year-round accessibility of the region. Due to the change in the structure of the project-executing agency, which was made in the course of the project implementation, and due to further delays the programme, which was originally designed to last four years, finally took altogether eight years. During this period the traffic in the region was severely hampered.

### **Key Results of the Impact Analysis and Performance Rating**

(1) The project road is a section of the most important north-south traffic axis in Chad, which in its further course connects the capital N'Djaména with the town of Moundou, which is roughly 460 km away and constitutes the major economic centre of the country. The Logone region, which is situated south of Mayo Kebbi, is the granary of the country. The town of Moundou is the centre of cotton growing and the country's most important consumer industry location. The result of the project is a road connection which can be used year-round.

The project renders an important contribution to ensuring an all-year and safe traffic connection between Chad's two most important cities. Thus, it contributes to the further economic and administrative development and interlinking in the country. The project road has positive effects on trade in agricultural and industrial goods and allows unhindered passenger traffic. The strong increase in the transport volume and the unexpected rise in passenger traffic indicate that before the upgrading of the road a large share of existing transport demand had not been satisfied.

The direct target groups of the project are the transport industry and its customers all over the country. On this most important traffic axis of the country private transport companies mainly transport import goods, but also domestically produced goods from the Moundou region to supply the population. The Mayo Kebbi region, through which the project road passes, produces grain surpluses (mainly rice) that are transported to the capital for sale. Before the rehabilitation of the project road the transport of goods and persons was frequently interrupted for at least three months every year during the rainy season because the road was impassable.

Achievement of the overall objective: Due to the improved traffic connection the detour traffic via Cameroon could be terminated. This and the improved roadway quality of the project road led to considerable savings in vehicle operating costs (on average costs roughly halved). Currently the actual number of vehicles that use the road is 200 vehicles per day on the northern section and 200 vehicles per day on the southern section, which is more than the target values determined at project appraisal (100 and 70 vehicles/day). The internal rate of return of the project is satisfactory (11%). Maintenance works conducted by the Direction Générale des Routes on the project road are regular and adequate.

(2) The result of the road renewal project is the limited year-round passability of the roads (routes semi-permanentes) Abéché-Oum Hadjer (92 km) and Abéché-Biltine (146 km). However, mainly in the rainy season between June and September, both roads still have to be closed by rain barriers for some hours on several days. Still, severe and long traffic disruptions are a thing of the past. The roads that were rehabilitated are sections of the main traffic routes of the country and, thus, are part of the national road network. They are regularly maintained by the Direction Générale des Routes.

The road renewal project made an important contribution to ensuring the year-round and safe traffic connection between the capital and the Ouaddai region and, thus, to supporting the economic and administrative development and interlinking in the project region. The direct target groups of the project are the transport industry and its customers all over the country. Abéché is an important trade centre where import goods arrive from Cameroon and N'Djaména as well as goods imported from the gulf states via Sudanese ports and goods from Libya

transported across the Sahara desert. On the N'Djamena-Abéché-Sudanese transport route and on the route from Libya via Biltine to Abéché private companies transport mainly import goods, but also domestically produced goods to supply the population. Since transport has been greatly facilitated and due to the opportunity to obtain better sales prices agricultural production in the catchment area of the roads was increased. Agricultural products from the Ouaddai region (onions, peanuts, tomatoes) are transported to the capital for sale. Due to the positive impact on agricultural production, among others, the project contributes to poverty reduction. Before the rehabilitation of the roads passenger and freight transport was frequently interrupted for at least three months every year. After the completion of the Abéché-Oum Hadjer road bus connections were established by private companies between Abéché and N'Djamena. Now up to five busses transporting 70 to 80 persons each travel in both directions every day. The busses carry passengers in about 22 hours over a distance of 888 km at a price which is affordable by local standards. An additional target group that was originally not intended are the approximately 200,000 Sudanese war refugees from Dafour, who are now living in camps in the border region in Chad. Thanks to the rehabilitated road connection it was possible to build up an extensive supply base in Abéché. The refugees are also partly supplied with food and other essential goods via the Oum Hadjer-Abéché project road.

Achievement of the overall objective and the project objective: The roads are mostly passable year-round. In 2005 the traffic volume was 105 vehicles/day (Abéché-Oum Hadjer) and 77 vehicles/day (Abéché-Biltine), which is a strong increase compared with the numbers (approx. 5 to 8 vehicles/day) at the time of the project appraisal. Owing to the rehabilitated roads it was possible to substantially reduce vehicle operating costs. The internal rate of return for the Abéché-Oum Hadjer road is 17%, for the Abéché-Biltine section it is 7%.

The maintenance condition of the roads is satisfactory. They are part of the priority road network of Chad and in consequence they are given preferential treatment as far as maintenance is concerned. The funds available to the regional road direction (Direction des Routes) are only just sufficient to finance and ensure an overall adequate maintenance of the roads in the future as well. However, it can be assumed that, especially due to the financial strength of the FER road fund, road maintenance, which is today still deficient, will clearly improve in the future.

We rate the developmental effectiveness of the road upgrading project and the road renewal project in Chad as follows:

- In view of the fact that the indicators for the achievement of the project objective were met and even exceeded and that the project improved the year-round traffic connection of the Mayo Kebbi and Ouaddai regions, and in view of the generally acceptable level of risk to the sustainable use of the roads, we judge the effectiveness of both projects to be satisfactory (sub-rating 2).
- Measured by the specific investment costs, we judge the production efficiency of the road upgrading project as sufficient and for the road renewal project as still sufficient. For both projects the actual traffic volume achieved is clearly above the level expected at project appraisal. The cost-benefit analysis for the road upgrading project shows a positive internal rate of return of 11%. We consider the efficiency of the project as satisfactory (sub-rating 2). The internal rate of return for the two sections of the road renewal project is acceptable and high (7% and 17%, respectively). We consider the efficiency of this project as satisfactory (sub-rating 2).
- On principle both projects were suited through the upgrading of the road connections into all-year passable long-distance connections to contribute to improving the economic links between the capital N'Djamena and the Mayo Kebbi province and to improving the traffic connections of the Ouaddai region with the rest of the country. Freight traffic on the project roads contributes to improving the supply of major parts of the population with essential goods of daily use, especially food. Due to the bus connections, which have become firmly established, the mobility of the population increased substantially and this, in turn, has positive impacts on trade. Therefore, we assess the significance / relevance of the project as satisfactory (sub-rating: 2).

In summary, we judge the developmental effectiveness of both projects to be satisfactory (rating 2).

In accordance with the assessment made at the time of the project appraisal both projects do not have any gender-specific impacts. Direct poverty reduction had not been defined as an objective at project appraisal. Temporary employment effects occurred under the road renewal project due to the assignment of local construction firms. Due to their positive impacts on agricultural production, among others, both projects contribute to poverty reduction. None of the two projects was designed to improve the environmental situation. The environmental impacts of the construction measures, both with regard to the provision of construction materials and the additional land consumption, were low. Due to the bitumen surface of the Guélangdeng-Eré road dust contamination was considerably reduced. There is environmental pollution caused by exhaust gas emissions, however, the negative impacts caused by oil and fuel leaking to the roadside from vehicles that are repaired are far more severe. To solve these problems the project-executing agency will establish a surveillance brigade. The projects did not pursue the goal of improving governance.

## General Conclusions

In order to obtain a better picture of the socio-economic effects of road projects the project impacts should be detected and analysed over time through appropriate monitoring measures.

The establishment of road funds (fonds routiers) helps to reduce discretionary and often unreliable appropriations of funds by the respective ministry of finance for road maintenance. In many instances this would help to considerably improve road maintenance.

In countries with severe financial bottlenecks in the area of road maintenance it is advisable to restrict FC measures to the priority road network because this helps to substantially reduce sustainability risks.

## Legend

<b>Developmentally successful: Ratings 1 to 3</b>	
<b>Rating 1</b>	<b>Very high or high degree of developmental effectiveness</b>
<b>Rating 2</b>	<b>Satisfactory developmental effectiveness</b>
<b>Rating 3</b>	<b>Overall sufficient degree of developmental effectiveness</b>
<b>Developmental failures: Ratings 4 to 6</b>	
<b>Rating 4</b>	<b>Overall slightly insufficient degree of developmental effectiveness</b>
<b>Rating 5</b>	<b>Clearly insufficient degree of developmental effectiveness</b>
<b>Rating 6</b>	<b>The project is a total failure</b>

## Criteria for the Evaluation of Project Success

The evaluation of the "developmental effectiveness" of a project and its classification during the ex-post evaluation into one of the various levels of success described in more detail below concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness**)?
- Does the project generate sufficient **significant developmental effects** (project **relevance** and **significance** measured by the achievement of the overall development-policy objective defined beforehand and its effects in political, institutional, socio-economic and socio-cultural as well as ecological terms)?
- Are the **funds/expenses** that were and are being employed/incurred to reach the objectives **appropriate** and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of the project conception)?
- To the extent that undesired (**side**) **effects** occur, are these tolerable?

We do not treat **sustainability**, a key aspect to consider for project evaluation, as a separate category of evaluation but instead as a cross-cutting element of all four fundamental questions on project success. A project is sustainable if the project-executing agency and/or the target group are able to continue to use the project facilities that have been built for a period of time that is, overall, adequate in economic terms, or to carry on with the project activities on their own and generate positive results after the financial, organisational and/or technical support has come to an end.