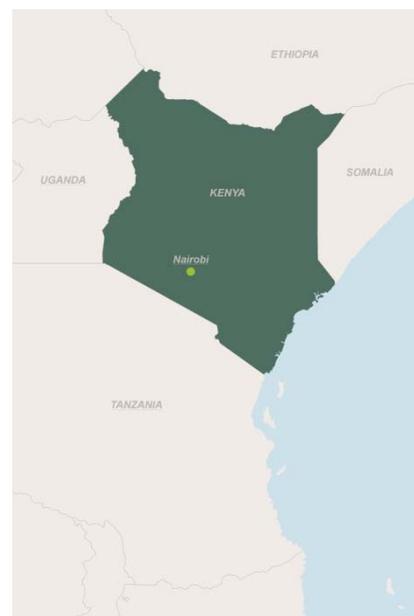


Ex post evaluation – Kenya

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Sector: Roads (CRS code 21020)
Project: Rehabilitation of Maai Mahiu-Narok Road (BMZ-No. 1999 66 458)*
Projekt executing agency: Kenya National Highway Authority (KeNHA)



Ex post evaluation report: 2014

		(Planned)	(Actual)
Investment costs (total)	EUR million	40,02	58,49
Counterpart contribution	EUR million	4,02	20,62
Funding **	EUR million	36,00	37,87
of which BMZ budget funds	EUR million	18,00	19,87

*) Project not in KfW evaluation random sample 2014, evaluation follows agreements between KfW and AfD

**) Including EUR 18 million AfD loan funds

Description: The project comprises the reconstruction of the Maai Mahiu-Narok road (B3) on 89.3 km and consulting services. The project road is a very important link from Maai Mahiu to Narok and Bomet, both capitals of counties with high agricultural potential. Furthermore, the traffic of the Kisii region and the traffic of the north-western part of Tanzania use the shorter link via the project road to the Central Region of Kenya instead of using the link via Nakuru. The project was co-financed by the Agence Française de Développement (AfD), granting KfW the mandate to administrate the project including the AfD funds.

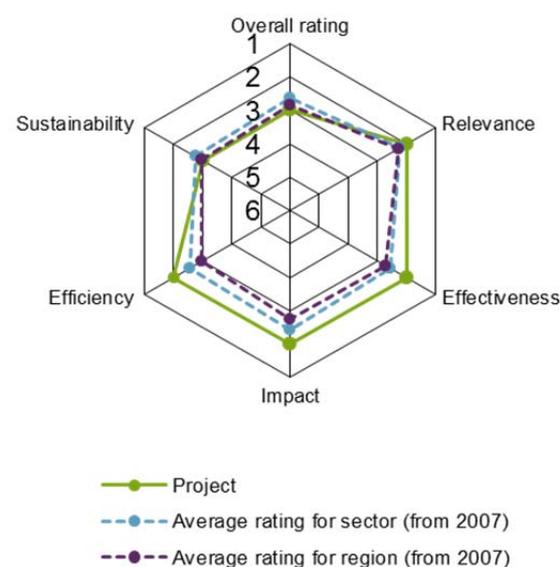
Objectives: Overarching project objective: The project was supposed to contribute to the economic growth of Kenya and improve the living conditions of the population in the project region. The project objective was the sustainable and efficient processing of the projected traffic.

Target group: Population living in the area of the project road (388,000 people), the agricultural and non-agricultural businesses in this region and the transit traffic on the project road.

Overall rating: Satisfactory (grade 3)

Rationale: The project improved a very important road link in Central Kenya, a region with high agricultural potential. Mainly because of the high traffic volume and the socioeconomic effects, the overall development impact is good, but traffic accidents increased. The sustainability of the project, however, is affected by the future financing of road maintenance and by rain water causing shoulder damages and a flooded road surface.

Highlights: Financed by the German Financial Cooperation "tourist roads program", the project road had already been rehabilitated during 1969-1974. This illustrates well the dependence of the Kenyan roads sector on external support. In this case, however, the old road had reached the end of its economic life time and was suitable only for a traffic volume lower than today's traffic. The old alignment could still be used.



Rating according to DAC criteria

Overall rating: Satisfactory (grade 3)

The main factor leading to an overall "satisfactory" grade is the sustainability of the project. The future financing of road maintenance is not without risk, even for this important road link. The financing required will be continuously high, since rain water causes shoulder damages and a flooded road surface. While economic efficiency is high, doubts remain whether the road design optimally reflected the risks through flooding. The relevance of the road link is high for local and regional traffic and project goals and indicators were met. A weakness concerns traffic safety at dangerous spots of the road.

Relevance

The project intended to improve a very important link from Central Kenya to Narok and Bomet, both capitals of counties with high agricultural potential. Furthermore, the traffic of the Kisii region and the traffic of the north-western part of Tanzania would have a shorter link (saving approximately 66 km) to the Central Region of Kenya. Part of the link (Amala River-Narok, 57 km) had previously been co-financed by the German Financial Cooperation. The road also takes a considerable amount of the tourist traffic to Masai Mara. The condition of the bitumen project road before the start of the project-related works was poor to very poor, resulting in long travel times (approximately three hours) and high wear and tear of the vehicles.

By upgrading the road between Narok and Maai Mahiu, the project had the potential to address a crucial bottleneck in the national road transport system, to contribute to the mobility of the population, to support economic activity and facilitate access to social services.

However, rehabilitation of a road which had been rehabilitated with German Financial support before, poses questions concerning past and present sector performance. The Kenyan road sector is still not independent of external financial support. Yet, in this case here, the old road had reached the end of its economic life time and was anyway previously constructed at a standard not suitable anymore for today's traffic volumes. The old alignment could still be used. The repeated financial support for the road does not negatively influence the evaluation rating.

The project was and still is consistent with the beneficiaries' requirements and priorities (see Kenya Vision 2030 and the Second Medium Term Plan of the Government of Kenya). It was embedded in harmonization and alignment efforts undertaken by the former Ministry of Roads and Public Works through meetings between the Ministry and donors. Further, the management of AfD funds was delegated to KfW, which reduced the transaction costs to the Government of Kenya. The transport sector is no longer a core area of German Financial Cooperation with Kenya, but continues to be of high priority to the Kenyan government.

Relevance sub-rating: Good (grade 2)

Effectiveness

The road was reconstructed as planned on a total length of 89.3km to a bitumen standard, with a width of the carriage way of 7m and two shoulders of 1.50m each. The road was almost completed when El Niño struck. Repair works in response to flooding damages were completed in early 2011. The evaluation mission in 2014 considered the quality of the road to be good, just like the final technical inspection of 2011.

The project objective was the efficient and sustainable processing of the projected traffic. Suitable indicators for the project objective are the increase of traffic volume as well as the reduction of travel time on the road from Narok to Maai Mahiu. Both indicators have been met (see table below).

The actual traffic development is significantly higher than forecasted (3% p.a. in the appraisal report). Because of the uncertain amount of temporarily diverted traffic (see table) we will use the 2012 traffic data. The resulting actual average traffic growth rate between 2001 and 2012 was 8.2% per year.

The road can be used throughout the year without limitations. The travel time has been reduced from about 3 hours to 1.5 hours.

Indicator *	Status Project Appraisal	Status Ex post evaluation
(1) Attainment of forecasted average daily traffic (for 2012: => 1,913 vehicles)	Average daily traffic in 2001 (at appraisal): 1,171 vehicles	Actual average daily traffic in 2012: 2,783 vehicles; Actual average daily traffic in 2013: 3,398 (including temporarily diverted traffic from/to Kisumu because of construction works on the Mau Summit-Kericho road)
(2) Reduction of travel time.	3 hours	1.5 hours

*) At project appraisal, the economic internal rate of return (EIRR) was chosen as an indicator for the project objective, see efficiency and impact.

The rehabilitation of the road also has negative side effects. The danger of accidents has increased. At some spots, many accidents occur because of an excessive speed of the vehicles. The most crucial and dangerous points are

- A long descent and curve near Ntulele (km 66);
- A bridge at km 67;
- A long descent near Eor Enkule.

It is not specific for this project that a better road network allowing for higher speed and higher traffic volumes leads to more accidents. If, however, specific dangerous spots are identified, as in this case, action should be taken to reduce the risk of accidents.

Effectiveness sub-rating: Good (grade 2)

Efficiency

The specific costs of the project road (0.655 million EUR per km) has been higher than originally envisaged, but is assessed by KeNHA as acceptable. The increase of costs is partly due to the delays of the implementation of the project by about two years. The time for contracting the implementation consultant was much longer than expected because the second-placed bidder challenged the bid evaluation result. Furthermore, the first tender of the construction works was limited to Kenyan, French and German bidders and led to no acceptable financial offers. Only after a second tender that was also open to bidders within the European Union, the contract could be awarded. Consequently, the duration of the consultant's contract had to be increased.

Further, additional construction works, first, to repair 2009 flooding damages and, second, also to prevent further flooding through structural improvements of the road were implemented in 2010/2011 (duration: 14 months) and financed through a reallocation of residual funds of other German Financial Cooperation projects and an increase of counterpart funds. The design of the road took account of the risk of damages through flooding. From today's perspective - see sustainability - higher investment costs to better adapt the road to weather and climate threats would have been appropriate from the start.

In order to assess the economic benefits of the road, an economic investment analysis has been carried out. In this analysis, only the main benefits and costs that can easily be identified and expressed in monetary units have been included. The included benefits are the vehicle operating cost savings and the saved maintenance cost of the former road. The included costs are the investment costs and all maintenance costs of the project road. The analysis has been carried out on the basis of economic prices. Because of

the tremendous increase of traffic since the construction works ended, and despite the cost increases (previous and assumed future costs for flooding repair works have been included), the calculated future benefits are very high leading to an economic internal rate of return (EIRR) of 31%. From an economic viewpoint, the investment was profitable. However, the assumption made for this calculation is road maintenance which preserves the current very good road standard. Lack of maintenance will reduce the benefits.

Efficiency sub-rating: Good (grade 2)

Impact

The overarching developmental objective has been stated at appraisal as “improvement of the socio-economic living conditions of the population in the project region”. Because of the importance of the road for transit traffic, a contribution to economic development should be added as further overarching developmental objective. Indicators were not specified at appraisal, but the EIRR can be used as one indicator for the economic project impact. Due to data limitations for the improvement of the socio-economic living conditions of the population in the project region, only qualitative assessments are possible.

The study "A Socio-Economic Baseline Study for Maai-Mahiu Narok Road" dated February 2009 was not helpful in terms of data provision for project indicators because the decisive data were non-existent or could not be followed up. Its method of comparing the project region with a region without an improvement of a main road is considered to be methodologically questionable because the two regions were too different to form suitable comparisons.

The transport sector is an important contributing factor to economic growth. In developing countries, the traffic growth rate can be approximated as a function of population growth and GDP per capita development and is often even higher than the GDP growth rate. For Kenya as a whole, the average annual real growth rate of GDP between 2002 and 2012 (4.7%) is taken as a rough estimate for the general traffic increase, for which no data are available. The traffic growth rate on the project road of 8.2% is much higher than 4.7%. This can be for several reasons: Traffic can be diverted from other roads, the economic development in the project region might be particularly high, and the new road might also make traffic cheaper or more comfortable (generated traffic).

Generally, it can be observed that the traffic conditions of Narok and the villages between Maai Mahiu and Narok have improved a lot. In Narok, all existing six mini- and midibus operators have been interviewed. Two of the enterprises have been founded recently (in 2010 and in 2014). All of them have increased their vehicle fleet. In addition, big bus companies with their official seat in Nairobi or in other big cities in Kenya pass by Narok. At any time of the day, passenger and goods transport services are offered for the main destinations.

The improved transport conditions tend to decrease the transport costs of inputs and outputs of the local industries. Therefore, it is reasonable to assume that the enormous boom of Narok city with its manufacturing and service industries can be partly attributed to this improvement.

It can be observed that in Narok town

- The population has increased from 22,315 in 1999 to 42,505 in 2009. The corresponding annual growth rate was 6.6% (3.0% for Kenya) - population estimate for 2014: about 55,000;
- The number of Kenya Power customers has increased by more than 2,000 customers between 2006 and 2014;
- The number of banks has increased from 6 banks in 2006 to 10 banks in 2014;
- A university has been founded in 2007;
- A new drinking water treatment plant with a capacity of 4,000 cubic meters per day is presently under construction. Taking into account the existing plant, the total capacity will increase up to 5,000 cubic meters per day. An improvement of the drinking water supply of the neighbouring villages with tank vehicles is planned.

In the four towns and villages along the project road as well as in Nairagie Enkare (5.6 km off the road) improvements could be observed in the

- Health services (5 new private clinics since 2004);
- Education facilities (6 new private and public schools since 2004, 1 public teachers training centre in 2014);
- Connection to the electricity network operated by Kenya Power.

Concerning the health services, it can be stated that patients use the project road for visiting the clinics in the villages or for visiting the hospital in Narok. Concerning the education situation, pupils are also using the project road to attend the school. Precise figures were unfortunately not available for patients and pupils using the road. The new facilities may have been created also without the project road, but the new road has improved their accessibility.

Concerning the connection to the electricity network, Kenya Power informed that the maintenance of the power line along the project road has become easier. Customer complaints can be treated faster.

The improved accessibility of the villages along the road had a positive influence on market activities of agricultural inputs and outputs, therefore tending to increase the agricultural production. Unfortunately, the available data on meat and crop production could not be used to substantiate this proposition because of their limitation concerning time series and aggregation level. The Narok County Department of Agriculture stated that the project road led to an improved delivery of agricultural outputs and an improved supply of farm inputs resulting in the expansion of agricultural markets.

Indicator	Evaluation of Adequateness
Economic internal rate of return (EIRR) >12%.	Achieved. 31 %.
Improvement of the socio-economic living conditions of the population in the project region.	Only qualitative judgements were possible; see above. The project has plausibly contributed to an improvement of socio-economic living conditions of the population in the project region.

Impact sub-rating: Good (grade 2)

Sustainability

Routine maintenance has been carried out on the project road between March 2010 and June 2014. However, along the road some potholes and some trenches clogged by vegetation or waste could be made out. The additional construction works of 2010/2011 could not entirely prevent further flooding damages. Because of the flooding during the rainy seasons in the years 2011-2014, again, repair works have been implemented (box culverts, pipe culverts, gabions). Further flood repair works can be expected for the future years.

Alongside the project road, no axle weighing bridge was operating. The former stationary weighing bridge in Maai Mahiu was closed in January 2013. However, the Materials Testing and Research Department of the MoTI has weighed the axle loads of the heavy vehicles on the project road in May 2013 (one mobile station at Maai Mahiu and one mobile station at the junction in Kaplong, near Sotik). The test at Maai Mahiu showed that between 15% and 32% of the heavy vehicles had axle loads above the limit. At Kaplong the percentages were lower (7% - 25%). The results show that overloading is a danger for the sustainability of the project road.

From the viewpoint of today, the road should have been made "stronger" and certain sections of the road (approximately km 23-28) should have been raised. At the time of appraisal, however, it could hardly be foreseen that the traffic would triple during 2001-2013 and that the flooding would be stronger. The evaluator has been informed that the increase of flooding can be partly explained by deforestation north of Suswa and Duka Moya. To ensure the future trafficability of the road, measures have to be taken to protect the road from damages caused by heavy rains. KeNHA has to investigate which measures are ap-

propriate and cost efficient. To ensure the future trafficability of the road until the end of the designed life time (2029), strengthening of the road seems to be necessary.

With regard to the high priority of the project road KeNHA will probably reinforce the project road and keep it in good condition at least until the end of the designed life time. It is, however, not guaranteed that the financial means will be available. At present, the financial means from the Kenya Road Board are not sufficient to cover all requirements for the routine and the periodic maintenance of the main road network.

Sustainability sub-rating: Satisfactory (grade 3)

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Ratings level 1-3 denote a positive assessment or successful project while ratings level 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Ratings 1-3 of the overall rating denote a "successful" project while ratings 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (rating 3).