

Cambodia: Extension of rural roadways (TRIP I-III) and removal of flood damage on rural roads and other infrastructure (FRP)

Ex post evaluation report

OECD sector	21020 / Road transport			
BMZ project IDs	1995 65 565, 1999 065 211, 200 65 904 2001 66 256			
Project executing agency	Ministry for Rural Development			
Consultant	Dorsch Consult / Haas Consult			
Year of ex post evaluation report	2007			
	Programme appraisal (planned) (For all projects)		Ex post evaluation report (actual) (For all projects)	
Start of implementation	Q4 1995		Q4 2005	
Period of implementation	50 months		136 months	
Investment cost	EUR 24.3 million		EUR 29.1 million	
Counterpart contribution	<>		EUR 0.6 million	
Financing, of which FC funds	EUR 20.9 million		EUR 20.7 million	
Other institutions / donors involved	EUR 3.4 million		EUR 7.8 million	
	TRIP I	TRIP II	TRIP III	FRP
Performance rating	3	3	3	2
• Relevance	2	2	3	2
• Effectiveness	3	3	3	2
• Efficiency	2	2	3	2
• Overarching developmental impacts	2	2	2	2
• Sustainability	3	3	3	2

Brief description, overall objective and project objectives with indicators

The projects were concerned with the rehabilitation, extension and maintenance of rural roads (tertiary roads) (TRIP, Tertiary Roads Improvement Programme) as well as – in subsequent project phases – of supplementary rural infrastructure items (simple bridges, passages, schools and markets) in the provinces of Kampong Cham, Kampong Thom and Prey. The overall objective of the TRIP project was to improve the living conditions of the rural population in the project region by providing better transport connections in rural areas (project objective). For this purpose, social criteria were applied to the selection of roads in agreement with the World Food Programme (WFP) and the use of FC funds improved the technical design and hence the efficacy of the measures to provide food by means of labour-intensive road-building.

The TRIP I-III programme objective was, by developing rural roadways, to improve the year-round transport connections between the villages in the programme region and at the same time

to provide food-for-work (FFW) measures to enable the local people to earn a living and to provide them with food. The indicator that was defined was that (TRIP I) 60%, (TRIP II) 70% or (TRIP III) 75% of the roads were still to be largely usable two years after completion and that (TRIP III) 240,000 people were to benefit directly or indirectly from food-for-work measures. The FRP programme objective was to restore access by the rural population to the social and economic infrastructure in the programme provinces.

The overall objective of TRIP I-III was to contribute to improving the living conditions of the rural population. No indicator was formulated for the overall objective. From today's perspective, the achievement of the overall objective can be measured by whether the roads have contributed to improving access to the economic and social infrastructure, e.g. markets, schools and health facilities (indicators: shorter travel times, reduction in transport costs, higher school attendance rates). The overall FRP objective was to restore the use of the infrastructure facilities to the situation before the 2000 floods.

Project design / major deviations from the original project planning and their main causes

The core activities of the TRIP phases contributed to the rehabilitation or extension of rural roads. In the three TRIP phases 1,173 km of rural roads were completed (TRIP I target: 200 km, actual: 292 km; TRIP II target: 300 km, actual: 428 km; TRIP III target: 400 km, actual: 453 km) and additional passages and bridges were built. In choosing the roads, poverty criteria were established in cooperation with the WFP in order to take account of the food provision concept of the FFW measures. In the course of the project phases, greater account was taken in the criteria of the expected economic impacts and strategic aspects. Favourable exchange rate developments led to the planned length of the roads to be built being exceeded, which, particularly in the case of TRIP III, made it possible to extend the duration of the project. Moreover, simple building equipment was supplied and some second-hand equipment was purchased locally. In order to avoid overload by large lorries, concrete posts were positioned along the edge of the roads and greenery was planted along the banks at the side of the road.

The concept of labour-intensive road-building was planned by WFP; cooperation with FC funds led to a substantial improvement in the construction quality as a result of the financing of upper laterite layers. However, the structure of the road with a 11.5 cm laterite layer was distinctly geared to the reduced sustainability requirement for FFW roads, as in this case periodical maintenance work after roughly three years is necessary given approximately 3 cm loss of the base course.

The so-called Lengthmen system was used in the projects to organise routine maintenance. In this system local people take responsibility for maintaining sections of the road measuring 1.2 km on average; they were paid USD 14/km/month out of project funds for their work. In addition to training measures and basic equipment (handcarts, compacters), laterite heaps for minor repairs were placed regularly at points along the roads (approximately 15 m³/km/year). When TRIP III ended (i.e. end of September 2005) the financing of the Lengthmen system initially expired.

Removal of flood damage to rural roads and other infrastructure items (FRP): The emergency programme concentrated on two activities – rehabilitation of rural roads and the restoration of other rural infrastructure items (bridges, dams, markets, rural primary schools). The individual measures were carried out in six of the Cambodian provinces affected by the flood in 2000 (Kampong Cham, Kampong Thom, Prey Veng, Kampong Chhnang, Kratie and Kampot). A total of 98 km of TRIP roads were repaired (target: 100 km), 288 km of other laterite roads (target: 200 km) rehabilitated and 40 schools (target: 20), 119 passages, 7 km of dams and 55 short

bridges (total length: 772 metres) were rehabilitated or newly built. All in all, this gave the local people renewed access to the social and economic infrastructure in the regions affected.

The local people were involved in the excavation work in all project phases and their work was paid for with food from the WFP contribution. In TRIP III, cooperation with WFP was marred by the fraudulent channelling of food to people who were not entitled to it. However, the FC component was not directly affected and the government compensated WFP.

Overall, the project design, which combined food provision via FFW and an improvement to the infrastructure by building roads, was appropriate. However, this needs to be qualified by stating that the further development of the design to take greater account of the life cycle costs in the structure of the roads came too late.

Key results of the impact analysis and performance rating

With the target group of the poor rural population, the projects can be classified under other direct poverty reduction. Environmental protection was not part of the target system of the individual projects. They also had only limited potential to contribute to improving gender equality. Satisfactory advantage was taken of the limited potential in the context of appointments to vacant positions during programme implementation. The promotion of participatory development or good governance was not part of the programme objective.

The microeconomic impact of the programme for the rural population was based on (a) improved access to the social and economic infrastructure and (b) the employment impact. Compared with the desolate state at the end of the Khmer Rouge regime, there was a marked improvement in access to the infrastructure. In accordance with the approach of using FFW measures (from WFP funds) to improve food supply in areas that were particularly affected by rural poverty, the population also benefited directly from the programme. When construction projects came to an end, this impact on income was limited to income generation in the context of routine maintenance, i.e. to roughly one person per kilometre of road (1,460 people for the TRIP programme).

The main impact is to be seen as lying in the impact on connections which made it easier for a large number of people in the affected provinces to access schools, markets, health stations, and towns. Surveys on TRIP III roads revealed that by project completion travel times in most of the categories (travel time to the fields, markets, school, health care establishments and administrative offices) were reduced to one-third in 2004. It can be assumed that the impact will be of a similar order by the conclusion of the other project phases. Given the statements on the decline in passability at the time of the ex post evaluation, it can be assumed that the time saved will be similarly reduced in the rainy season. In addition to the increase in traffic already mentioned, the people are benefiting from the reduction in transport costs. In the area, people reported that transport costs have been halved since the improvement of the state of the roads (from 5,000 riel per journey to 2,500 riel per journey). According to information from local inhabitants, the current slight increase in transport costs is due to increases in the price of petrol. The fact that the cost increase has been no more than moderate is due to the competition in the transport sector. The traffic censuses carried out in TRIP II and III reveal an increase in motorised traffic, unweighted by kilometre, of around 230%. No census was taken of bicycle traffic, which is also significant.

From the perspective of the rural population, the microeconomic impact is distinctly positive. In addition to the temporary direct income generation in the context of the construction measures by WFP, the project contributed to a clear increase in economic activity. This is the case both in

agricultural production and in the development of a multifaceted service sector in the trade sector, petrol sellers and repair workshops for bicycles and motorcycles.

The improvement in the transport infrastructure achieved by the rehabilitation work and flood damage repair on tertiary roads has given a considerable boost to agricultural and social development. At the time of project appraisal, no variable was defined for the targeted traffic increase or the macroeconomic interest rate to be achieved by savings in road transport operating costs. In the ex post evaluation, a rough estimate was made which showed that with an approximate internal interest rate of 36%, the projects seem to be justified from a macroeconomic point of view. According to the local people, work on the road sections whose state of repair calls for spot interventions or routine maintenance has so far not led to reductions in the transport services for people or goods. There has been an increase in the trade sector overall, household income and assets, and land values (20%-50% increase in value in the region of the surveyed villagers). There has been a substantial increase in school attendance in the project areas and attendance at secondary schools in part only really began once the tertiary roads had been rehabilitated. The production of rice, cassava, fruit and vegetables has increased considerably since the end of the civil war, leading to a clear increase in the volume of transport from the rural areas.

In conclusion, it can be said that the macroeconomic impact of the road programme at the time of the ex post evaluation has fulfilled the expectations at programme appraisal satisfactorily. However, the maintenance problems, for which a satisfactory solution has not yet been found, give rise to fears that the impacts will decrease markedly in the future, although they will remain positive overall.

Summarised evaluation of the risks for sustained developmental efficacy

When the programme began, the living conditions in the rural area were characterised by the consequences of the Khmer Rouge regime and the associated ideology-based intentional systematic neglect of the infrastructure and market economy approaches, affecting poverty particularly in the rural areas. In order to be able to catch up more quickly with economic life in the towns and the region and to take greater advantage of the investment by other donors in the rehabilitation of agricultural infrastructure (e.g. irrigation systems by the EU), the rehabilitation of the road system was also, with hindsight, an appropriate step to take. The impact studies carried out during the TRIP phases, the interviews carried out during the final on-site evaluation and numerous other studies provide evidence of positive impacts, particularly as a result of the marked reduction in transport costs and travel times. The **relevance** of TRIP I, II and FRP was in line with expectations and was considered good (sub-rating 2). At the latest in TRIP III, however, the concept should have addressed the maintenance deficiencies more pointedly. The relevance of TRIP III was therefore only considered satisfactory (sub-rating 3).

The originally formulated soft level of requirements of the indicators of the achievement of the project objective with regard to TRIP I-III has to date been achieved or exceeded (two years after completion more than 60%, 70% and 75% of the road network still largely passable). From today's perspective, however, all programme phases need a level of requirement which takes account of the donor-financed maintenance measures and the associated management possibilities of the civil works consultant contractor and KfW. Given the financing of maintenance measures up to September 2005, a far higher passability requirement of 90% seems more appropriate and was the basis for the evaluation of TRIP I-III. Passability in the rainy season can be rated at more than 90%. Without the maintenance of TRIP I-III and FRP roads provided by the programme that was ongoing until September 2005, a very marked decline in passability would have occurred within two to three years and consequently the

benefits of the project would have decreased. The roads rehabilitated in the first phase of the programme would therefore have reverted to roughly their initial condition. Without further maintenance measures, it will not be possible to maintain this level of requirements during the coming rainy season in 2007.

No indicator was defined at project appraisal with regard to the expected volume of traffic. However, studies show that the volume of traffic has increased in all vehicle categories, with car traffic on the tertiary roads playing a lesser role than other vehicles (bicycles, mopeds/motorcycles, motor trailers and vans). There was a total average increase, unweighted by kilometre, of 223% in traffic over all TRIP road measures. The clear increase in road use documents the distinct improvement in access to and the transport opportunities within the rural programme areas.

Given the above facts (appropriate use, but given the maintenance deficiencies the condition of the roads only satisfactory) the achievement of the project objective and hence the **effectiveness** of the TRIP I-III measures must be assessed as satisfactory (sub-rating 3). With regard to FRP, primarily owing to the large financing share (50% of the total construction costs of EUR 6.75 million) of other, less maintenance intensive infrastructure (bridges, passages, schools (EUR 3.4 million)), the effectiveness has been assessed as good (sub-rating 2).

The impact achieved by the measures is considerable. The production and marketing of agricultural produce have improved as a result of better access to the markets. There has been an increase in trade generally, household income and assets, and the value of land. Access to educational facilities (especially secondary education) and health centres improved. The overall objective was thus achieved; the key criterion was, however, that the ongoing maintenance finance should carry on through the project as up to September 2005. It was only in the context of TRIP IV that German DC began to call explicitly for a self-sustaining (state-financed) maintenance system to be set up. The impact of the overall objective automatically decreases as the infrastructure deteriorates and transport costs and travel times increase, and there are delays, the length of which is very difficult to assess. Overall we still rate the **overarching developmental impact** of TRIP I-III and FRP as good (sub-rating 2).

The use of resources associated with the programme measures and the average implementation costs per kilometre were in line with the empirically established values in the sector. The available resources (which are subject to devaluation) enabled more kilometres of road to be implemented than planned at the start of TIP I-III and FRP. However, the use of the limited resources is inefficient in that deficits are associated, in particular, with the provision of routine maintenance, although it represents the cheapest way of maintaining the roads. The weak structure of the laterite layer – 11.5 cm until Phase III – is geared more to high area coverage than to sustainability and hence, although it is compatible with the limited sustainability criteria defined at project appraisal, as is reflected in the original indicators of the achievement of the project objective, from the present perspective, this is not in keeping with the nature of the serial project, with the result that Phase III must be considered the “lost” phase in terms of the further development of the design. Account was taken of this experience in the design of the ongoing phase (TRIP IV), in which a 15 cm laterite layer is planned and alternative materials are being tested. In the first two phases, the aspect of ensuring food supplies (FFP/WFP) was uppermost, with the result that, owing to the limited technical possibilities of WFP in manufacturing the sub-structure, quality deficiencies were to be expected. The life cycle cost approach should have been integrated more strongly in the third phase at the latest and possibly also in the context of FRP, with the result that the **production efficiency** of TRIP III is rated as unsatisfactory, whereas it was considered good for TRIP I and II and FRP. Owing to the roughly calculated good economic rate of return of the road construction measures

(production efficiency), the overall efficiency for TRIP I, II and FRP is rated good (sub-rating 2) and for TRIP III satisfactory (sub-rating 3).

Considerable risks were associated with the lack of a well-functioning management system for road maintenance as well as with the increase in the funds allocated from the regular government budget that has been observed for the past few years. The establishment of a consistent management system was still at a very early stage of development. A particular weakness was also the lack of across-the-board maintenance work. Given the clear material deterioration of rural roads because no maintenance has been carried out for several years, donor pressure should have led to earlier coordination and collection of counterpart contributions both for the routine and for the periodical maintenance. The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. Overall, the **sustainability** of TRIP I-III can be rated as satisfactory (sub-rating 3). As the work was originally designed as a WFP food provision programme, reduced sustainability criteria were applied to TRIP I and II. They could be applied to TRIP III in the same manner. The fact that TRIP III has still been given an overall positive sustainability rating is, however, based on the design change that was not introduced until the current phase TRIP IV with a view to insisting on a sustainable maintenance system from which, if it is successful, the TRIP I-III roads will also benefit. The maintenance backlog that has been observed and the time needed to set up a sustainable maintenance system leads to a clear increase in the sustainability risk. By nature, FRP requires a lower degree of sustainability, with the result that this aspect can be introduced in the second phase.

Taking account of the above individual assessments, the projects in the programme have been given the following overall rating: TRIP I und II: 3; FRP: 2; TRIP III: 3.

General conclusions and recommendations

Life cycle costs should be taken into account when planning rural road construction projects and the sustainability risks, which occur as a result of delays in the provision of funds, should be made sufficiently clear at the political level. There are ample opportunities in serial projects, but they should be prepared in an early phase if possible. A discussion on this issue between the Finance Minister and the ministry responsible for road maintenance should be initiated at an early stage and routine maintenance should not be a matter for an annual approval procedure.

If there are maintenance problems, a low-maintenance design should be chosen, even if because of somewhat higher unit costs, this leads to a far reduced length of road being built. In the case of serial projects in particular, this factor also needs to be communicated more forcefully to cooperation partners, such as the World Food Programme, which have another programme-based priority (food for work).

In countries with weak economic power, the country should be required to provide an increasing and appropriate counterpart contribution (particularly in serial projects). This makes it easier to transfer FC contributions needed to finance maintenance in particular cases at the start of independent road maintenance and hence to ensure sustainability.

Notes on the methods used to evaluate project success

Assessment criteria

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

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

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

Rating 1	Very good sustainability	The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.
Rating 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.)
Rating 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.
Rating 4	Inadequate sustainability	The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and an improvement that would be strong enough to allow the achievement of positive developmental efficacy is very unlikely to occur. 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.

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 focus on the following fundamental questions:

Relevance	Was the development measure applied in accordance with the concept (developmental priority, impact mechanism, coherence, coordination)?
Effectiveness	Is the extent of the achievement of the project objective to date by the development measures – also in accordance with current criteria and state of knowledge – appropriate?
Efficiency	To what extent was the input, measured in terms of the impact achieved, generally justified?
Overarching developmental impacts	What outcomes were observed at the time of the ex post evaluation in the political, institutional, socio-economic, socio-cultural and ecological field? What side-effects, which had no direct relation to the achievement of the project objective, can be observed?
Sustainability	To what extent can the positive and negative changes and impacts by the development measure be assessed as durable?