

Cambodia: Telecommunication I

Ex-post evaluation

OECD sector	22020 / Telekommunikation	
BMZ project ID	1995 65 805	
Project-executing agency	Ministry of Post and Telecommunication (MPTC)	
Consultant	Weidleplan GmbH, Stuttgart	
Year of ex-post evaluation	2005	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	Fourth quarter 1995	First quarter 1996
Period of implementation	29 months	40 months
Investment costs	EUR 10.0 million	EUR 9.1 million
Counterpart contribution	EUR 0.3 million	EUR 1.4 million
Financing, of which Financial Cooperation (FC) funds	EUR 7.7 million FC/grant EUR 2.0 million other donors	EUR 7.7 million FC/grant
Other institutions/donors involved	Still to be determined	none
Performance rating	3	
• Significance / relevance	3	
• Effectiveness	3	
• Efficiency	3	

Brief Description, Overall Objective and Project Objectives with Indicators

The project comprised the supply and the operational installation of transmission-related telecommunication equipment from the Vietnamese border through Phnom Penh to the Thai border. The Digital Transmission Trunkline Cambodia (DTTC), which was installed, has a length of 615 km. It ensures not only the terrestrial connection of important provincial towns in Cambodia, but for the first time also establishes a land-based telecommunication link between Cambodia, Thailand and Vietnam. Thus, in the framework of the integration of Southeast Asian states the DTTC is of supraregional importance.

The overall objective of the project was the efficient transmission of information for telecommunication services. The project objective was to ensure the readiness for operation of the facilities. No indicators were defined to measure the achievement of the overall objective. It is deemed achieved as soon as the project objective has been reached. Indicators for the achievement of the project objective were:

- In the event of cable break, restoration of readiness for operation within 30 hours;
- In the event of other interruptions or breakdowns, restoration of readiness for operation within 6 hours.

From today's point of view the above-mentioned overall and project objectives were not quite appropriate: The project objective was to refer to the utilisation of the capacities created and the overall objective was to aim at the developmental benefit for the target group. In this case an appropriate overall objective would be a contribution to increasing the economic and

administrative efficiency. An appropriate project objective would be the sustainable use of the installed transmission line by the target group. In this case qualitative and quantitative indicators for the achievement of the modified project objective would be:

- Transmission of different telecommunication services (fixed network, mobile services, internet, national and international calls) through DTTC;
- Increase in the use of the transmission of telecommunication services by at least 10 to 15% annually, measured by E1 (technical unit for leasable transmission lines).

The target group of the project are companies, administrations as well as other public institutions.

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

The original conception comprised the installation of a transmission line from Phnom Penh to Thailand and the establishment of local networks and related relay stations along the line. It was intended to include other donors in the financing of these measures. Due to technical progress, however, it was possible to adjust existing relay stations to the new requirements at lower costs than had been planned. The required limited investments and the expansion of local networks were implemented independently by a Cambodian joint venture. Thus, the involvement of other donors was not required. The FC funds not required were used for the extension of the transmission line to the Vietnamese border. All further costs were borne by the Cambodian government.

The individual measures implemented include:

- Supply and installation of a 615 km digital transmission line (light wave guide cables, terminal devices, power supply);
- Renovation of technical-equipment rooms, installation of containers to store equipment;
- Supply of measuring devices, special tools and vehicles for operation and maintenance as well as spare parts for at least one year after the preliminary acceptance; specific training for suppliers;
- Services of the implementation consultant.

The detailed planning was supported by the implementation consultant (Weidleplan GmbH). Bids for supplies and services were asked from German companies and the contract was finally awarded to a general contractor (ALCATEL CONTRACTING). On a length of approximately 200 km the cable was laid by hand. The local population was employed for such works. The result was limited direct income effects.

As compared with the original planning the implementation period was extended from 29 months to 40 months and this resulted in cost increases. The reasons for the delay were changes in the concept, the time-consuming coordination during the awarding of the contract and the temporary suspension of bilateral cooperation with Cambodia. In May 1999 the installed facilities went into operation.

Key Results of the Impact Analysis and Performance Rating

Though the Cambodian telecommunication sector has changed significantly in the last few years, it can still be described as only weakly developed. Its growth is concentrated heavily on specific regions, with the focus clearly on the capital Phnom Penh. Mobile telephony is dominant and shows high increases, which is mainly due to investments made by private telephone operators in the extension of the mobile radio networks.

A national terrestrial telecommunications network, which enables direct calls from one place to another, especially connecting provincial capitals, did not exist at the time of the project appraisal. The technical connection to the provincial capitals was only maintained on the basis of a satellite-based, very cost-intensive system with insufficient transmission quality that had been installed by the UN peacekeeping forces. A terrestrial connection between Thailand and Vietnam, which is important for the further integration in the Greater Mekong Subregion (GMS), did equally not exist.

As a result of the measures implemented a transmission line (DTTC) was established from the Vietnamese border through Phnom Penh to Thailand. The line helped to close a gap in the national telecommunications network and for the first time established a terrestrial connection with the networks in the two neighbouring countries.

A central challenge for the operation of the transmission line that was set up is to improve reliability. The availability of the DTTC is around 98%. This shows a considerable potential for improvement (Common standard in the telecommunications industry is an availability of 99.9%). In recent years operation broke down frequently and this reduced the interest of private providers in leasing capacities. The most frequent reason are cable breaks, which account for approx. 95.6% of downtimes. Such cable breaks were mainly caused by road rehabilitation measures and floods along the southern transmission line. The countermeasures taken (coordination with the Ministry of Transport, information provided to the building companies, distribution of information leaflets to the population) were little successful. After the termination of the construction measures the reliability of the DTTC improved, but is still considered as insufficient especially by the mobile network operators. Since the DTTC is a one-directional line (and not a ring network) every breakdown of the transmission line leads to a disruption of communication. The reaction of private mobile network operators to the unsatisfactory reliability is to rely largely on their own technical infrastructure.

Another problem is the lack of spare parts. In general spare parts used for repairs cannot be replaced. The stocks financed under the project are largely used up. Given the reduced financial autonomy of the project executing agency and the bureaucratic public procurement it is not ensured that the stocks can be replenished in the short-term. The continuous operational reliability of the DTTC is therefore at risk. In order to be able to ensure continuous operation the executing agency depends on the extraordinary allocation of funds from the state budget. Since revenue from the post and telecommunications sector represents an important source of public funding and makes up approximately 6-9% of total state revenue – to which DTTC makes a substantial contribution – it is to be expected that extra state funds will be made available at short notice in the event of disruptions in order to swiftly restore operability.

The internal return on investment of the project is calculated at around 7%. This calculation is based on conservative estimates for the further development of revenues and expenditures. The important aspect, however, is the assumption that downtimes will not increase significantly. In general a return on investment of around 8% is considered as adequate in the telecommunications sector. Therefore, the project's return is slightly below the target value, but the figure is still acceptable.

From a national economic perspective the project constitutes a central element of the Cambodian telecommunication infrastructure. The extension of the telecommunications network opens up efficient alternatives in the field of transfer of information over large distances and, thus, contributes to partly compensating for existing infrastructure deficiencies (rail and road). Telecommunication is indispensable for tourism, which is a rapidly growing and important source of foreign currency. Telecommunication is also of high importance for the financial sector. The continuous exchange of data (online systems) between the headquarter and the branches of a bank helps to substantially improve risk management. The improvement of the telecommunications infrastructure is a prerequisite for the outsourcing of business activities to low-income countries such as Cambodia in the course of globalisation. It is, however, not possible for this type of projects to precisely quantify the resulting benefit. It can be assumed that the project contributes to supraregional integration in the context of the Greater Mekong Subregion Initiative. The establishment of a terrestrial connection between Cambodia, Vietnam and Thailand supports the economic and political integration of these states. This is substantiated by the growing international telecommunication traffic, which is increasingly conducted via DTTC capacities.

The achievement of the modified overall objective and project objective can be summarised as follows:

- Achievement of the project objective: Since the start of operation in 1999 the DTTC has been used for the transmission of different telecommunications services, including mobile radio and the internet. Moreover, Cambodia was connected to the Thai and Vietnamese networks and, therefore, it is now possible to transmit international calls via the DTTC, too.

Capacity utilisation has developed very positively. The annual increase in capacity utilisation is on average 10.1%, which is at the lower end of the target corridor. Therefore, the qualitative and quantitative indicators are fulfilled. At the time of the final evaluation of the project approximately 52% of the total capacity was utilised. We consider this capacity utilisation rate as still sufficient. A clear increase in the capacities reserved for international communications traffic is expected for 2005 because the DTTC offers significant cost advantages in comparison with the satellite-based system. This would bring capacity utilisation to a satisfactory level.

- Achievement of the overall objective: The installed fibre glass cable meets the technical requirements on telecommunications facilities requested by productive users. The fixed network is mainly used by these productive users and by public institutions (ministries, hospitals, fire brigades etc.). This contributes to improving the efficiency of industry and the administration, which supports the economic development of the country, employment and links with other countries.

The average down time in the event of a cable break is approximately 19 hours. This figure includes large-scale floods that caused longer disruptions and hampered repair works. Down times caused by other failures on average amounted to about 2.5 hours. Thus, the originally set target indicators have been met.

Obvious employment effects directly attributable to the project were achieved only temporarily through the remuneration paid to the population for cable laying works. The poor benefit only indirectly from the project insofar as the improvement of telecommunications contributes to economic development and, thus, to creating job opportunities.

Positive environmental effects were not planned at the time of the project appraisal. The underground cable laying works were carried out along the existing road network. The project's environmental effects are negligible also taking into consideration the power supply for the facilities installed. The project did not aim specifically at supporting gender equality and gender-specific impacts did not occur. Equally, the project did not aim at achieving a participatory development or good governance.

The assessment of the different aspects of developmental effectiveness can be summarized as follows:

- Given the importance of the transmission line for the satisfaction of specific communication needs of productive users and administrations it can be assumed that the project contributed to increasing the efficiency of the economy and administration and, thus, also contributed to economic development. Therefore, the overall objective was achieved. However, it has to be noted that a large share of domestic communication – also communication by the target group - is handled via mobile networks and only to a small extent via DTTC capacities. The criterion of significance / relevance is therefore only sufficiently met (sub-rating 3).
- The actual capacity utilisation of the facilities financed is currently sufficient. Though, due to the acute lack of spare parts, the continuous operational reliability of DTTC is at risk it is expected that operability will be restored swiftly in the event of breakdowns through the allocation of extra funds because the revenues produced by the DTTC are of major importance for the state budget. Therefore, the sustainability risks are limited. The project's effectiveness is considered as still sufficient (sub-rating: rating 3).
- The existing calculations confirm the internal return on investment of the project though the general target value was missed slightly. The costs are considered as adequate. Overall, the project's efficiency is adequate (sub-rating 3).

Altogether, we judge the developmental effectiveness of the project to be sufficient (rating 3).

General Conclusions

The telecommunications sector is of major importance for the economic and social development of a country. However, it is obvious today that the expansion of mobile networks in urban centres financed by private investors increasingly substitutes for the lacking terrestrial networks. This is a risk to the success of FC projects that are not specifically aimed at providing a basic

supply in rural areas. Given the increasing importance of private investors in the telecommunications sector it seems to be no longer necessary in the future to support public operators with pure FC funds – except for the expansion of basic communication in rural areas.

The fact that an FC project shows an adequate internal return on investment is not sufficient to ensure its sustainable operation. It is equally important that the operator has the scope to implement the necessary operational investments on its own and when required. If a project-executing agency does not fulfil these prerequisites it should be tried, in the context of the sector dialogue, to push for sufficient autonomy in this area and, if necessary, to impose requirements to be fulfilled.

Legend

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

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.