Ex Post-Evaluation Brief
Nepal: Load Dispatch Centre and Extension of the Balaju Substation

Programme/Client	Load Dispatch Centre and Extension of the Balaju Substation (BMZ No. 1996 66 611)	
Programme executing agency	Nepal Electricity Authority (NEA)	
Year of sample/ex post evaluation report: 2011*/2011		
	Appraisal (planned)	Ex post-evaluation (actual)
Investment costs (total)	EUR 22.65 million	EUR 21.94 million
Counterpart contribution (company)	EUR 2.20 million	EUR 1.60 million
Funding, of which budget funds (BMZ)	EUR 20.45 million	EUR 20.34 million

* random sample

Project description: The project comprised two components: a) the construction of a load dispatch centre, the installation of telecontrol systems and the expansion of the related data transfer system in the Nepalese transmission grid and b) the expansion of the 132/66 kV substation in Balaju for connecting the hydropower stations Khimti Khola and Chilime to the national grid. Though largely executed as planned, the construction works were still considerably delayed through the ten-year civil war. The switchgears in the Balaju transformer substation went into operation in September 2001 and the load dispatch centre was handed over in April 2004. All facilities are of high quality and are properly operated and serviced. The costs of the project totalled about EUR 21.94 million and were EUR 0.7 million less than estimated at project appraisal. German Financial Cooperation made available EUR 20.34 million as a budgetary grant.

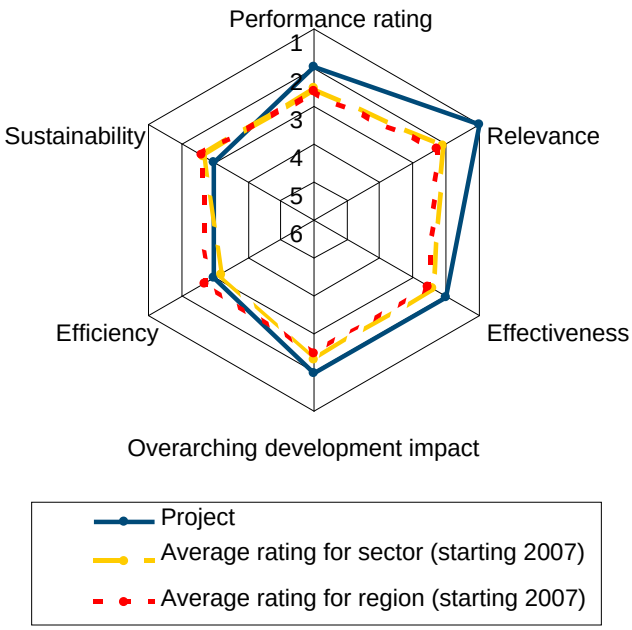
Objectives: The overall objective of the project was to contribute to national economic and social development through reliable and cost-effective power supply. The project objective was to improve power station use, energy and load management and grid operation. The extension of the Balaju transformer substation was to ensure the secure transmission of generated power from the two hydropower stations, Khimti Khola and Chilime, into the integrated grid system and connect it to the grid control station. Both measures therefore aimed at improving the national power supply.

Target group: All power consumers in the country, particularly productive users in the growth centres Kathmandu, Pokhara, Biratnagar and Hetauda.

Overall rating: 2

The project addressed a systemic weakpoint in the power sector, achieved a significant impact and built considerable capacities, despite adverse conditions immediately after project appraisal for the benefit of the population and the production sector.

Rating by DAC criteria



EVALUATION SUMMARY

Overall rating: Based on its developmental relevance and high effectiveness, the project is allotted the overall performance rating good. It addressed an extremely significant point in the power sector and despite the adverse conditions after project appraisal - the civil war and the ensuing ongoing unstable political climate - has had a remarkable impact and created capacities. **Rating: 2**

Relevance: Bottlenecks in electric power supply still place a massive constraint on economic development in Nepal. For lack of replacement and extension investments in the course of the ten-year civil war and the ensuing political instability, the integrated grid system is overstretched and in need of modernisation. With the aim of improving power station use and mains operation in the integrated grid system of the Nepal Electricity Authority (NEA), the project addressed a major development constraint in Nepal. Since project appraisal, the number of customers of the state power producer, NEA, has quadrupled and on-grid electricity generation has tripled, so that grid operation has become more complex. Altogether, this underlines the importance of the project for more efficient energy management and for mitigating the effects of the problems in the sector. Since the seventies, the energy sector has been a priority of German-Nepalese cooperation. At appraisal, the project conformed with the development-policy priorities of German development cooperation and the Nepalese Government. It is still coherent with the current development plans of Nepal and the sectoral strategy paper of BMZ of 2010 (Sub-Rating: 1).

Effectiveness: The project objective of improving power station use, energy and load management and grid operation as well as the secure transmission of the power generated by two new hydropower stations via the Balaju transformer substation has been attained overall. Most of the project objective indicators were met, even exceeded in part. The transmission losses and the number and duration of partial grid outages due to disruptions have been reduced significantly. The duration of total grid outages has more than halved. The number of total outages has, however, risen again after 2008. This can be largely attributed to the significant capacity bottlenecks on the generation and transmission side, although the load dispatch centre has made a considerable contribution to preventing an even higher number of power outages. Altogether, political instability and the resultant investment and reform backlog in the power sector substantially impeded project objective achievement. Already identified as risks at project appraisal, capacity development plans were insufficient and the implementation of sectoral reforms was delayed. Nevertheless, as confirmed by the relevant indicators, the project has made a major contribution to more reliable power supply to the target group (Sub-Rating: 2).

Efficiency: The project is gauged as efficient overall considering the results achieved in relation to resources allocated. The procurement costs were reasonable and the quality of the works conducted was very good. Total costs were less than originally expected by about EUR 1.7 million. As a result of the project, some 80 GWh of additional electricity was

supplied in 2010 due to fewer transmission losses and the reduction in the number and duration of mains disruptions as compared with the situation at project appraisal. Although the expansion of the national grid and power station capacities is still lagging behind total energy demand, the beneficial results of the project could hardly have been achieved more cost-effectively with alternative measures. The project is therefore assessed as the most cost-efficient option for objective achievement. Since commissioning, there has been a high turnover of specially trained operating personnel at the grid control station with the attendant loss of know-how and higher costs for training new personnel.

At the sectoral level, production efficiency suffers from high grid losses. Due to capacity bottlenecks in production, transmission and cross-border grid connection, only 80% of national power demand is met, while the remaining 20% is compensated for through planned load shedding. Only through the load dispatch centre has NEA been able to conduct controlled power cutoffs and inform the consumers in good time for the secure operation of the remaining grid. This has reduced the financial and economic losses due to undersupply. The low cost recovery rate of tariffs of about 72% attests to the need for improvement in allocative efficiency in the sector (Sub-Rating: 3).

Overarching developmental impact: Even though the reliability of power supply in Nepal has deteriorated for the reasons given, the project has arguably contributed to more efficient power supply than a hypothetical scenario without the project, and has as a consequence had beneficial effects on national economic development. The percentage of connections to the national power grid and, with that, the size of the target group has risen from 14% of the population at project appraisal to 54% in the year of evaluation. The load dispatch centre enables the effective management of shortages in the sector and prevents greater macroeconomic losses, as the supply situation would be much more precarious without the project. In particular, the existing productive and service sectors in Nepal, above all tourism, which makes up a major economic factor for the country, benefit from improved load management and the resulting mitigation of problems due to insufficient power supply. Owing to the capacity constraints in electricity generation and transmission, however, the project cannot bring its full potential to bear. Instead, it enables the operation of the inadequate power system in the best possible way. Moreover, the project can be attested a positive capacity-building effect, as it developed personnel and technical capacities for professional load management in the sector. This will help to cope with the forthcoming challenges in the planned grid expansion and power connection to India, especially as this will make grid operation much more complex (Sub-Rating: 2).

Sustainability: To ensure the sustainability of the results achieved, the financial position of the NEA must permit it to maintain the Financial Cooperation-financed infrastructure and retain its qualified specialists for longer. We consider significant tariff increases as unavoidable for the sustainable continuation of NEA. Its new management seems to be willing and able to remedy the financial, personnel and organisational problems. It remains to be seen, however, how far it can cope in a difficult environment. The firm commitment of the

donor community and the readiness of Nepal to tackle the energy crisis with the highest priority and cooperate with its neighbouring states in the energy sector give grounds for optimism (Sub-Rating: 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:

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

Ratings 1-3 denote a positive or successful assessment while ratings 4-6 denote a not positive or unsuccessful 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).