**Refinery Energy Conservation & Modernization**

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The Pakistan Refinery Energy Conservation and Modernization Project (Loan 2842-PK), for US$21 million, was approved in FY87. The loan was closed on June 30, 1996, three years behind schedule. An undisbursed balance of US$1.4 million was canceled. The Implementation Completion Report (ICR) was prepared by the South Asia Regional Office. The Borrower, the National Refinery Limited (NRL) provided its own review, which is appended to the ICR.

 The project’s objectives were (i) to reduce energy consumption by improving the refinery’s efficiency and by more efficient waste energy recovery; and (ii) to better use crude oil processing capacity and shift the production mix towards higher value products. The project components included (a) debottlenecking to expand throughput by about 30 percent; (b) using cogeneration steam turbines and diesel engines to establish a minimal self generation of electricity; (c) increasing naphtha reformer capacity to produce more high value products; (d) implementing various smaller energy saving investments (e) providing technical training in refinery operation.

 The project met most of its technical objectives, including debottlenecking to increase throughput capacity and improve the production of higher value products and decreasing energy utilization per unit throughput, although with substantial delays due primarily to a cumbersome procurement process. The co-generation plant, the completion of which was delayed in part by an explosion in a pre-existing boiler that was going to supply the required steam, is now expected to come on stream by the end of 1997, some four years behind schedule. Sixty percent of the refinery’s staff received technical training under the project. The economic rate of return for the implemented components is estimated at 32 percent, somewhat below the 42 percent estimated at appraisal, but acceptable for a revamping project where the marginal return is generally high. However, the refinery’s output of low value fuel oil is now 23 percent, up from 19 percent before the project, and its gasoline still needs a high level of lead, raising questions about the refinery’s longer term economic viability.

 The Operations Evaluation Department (OED) rates the project’s outcome as satisfactory, sustainability as uncertain, and its institutional development impact as substantial in light of the successful training component and of the demonstration effect of the project on the refinery sector as a whole. OED also rates Bank performance as satisfactory. The ICR has similar ratings, except for sustainability, which it rates as likely, primarily because NRL is judged capable of maintaining the new equipment in good operating order.

 The main lesson from this project is that, although marginal improvements can be made in the operation of state owned productive enterprises such as NRL, their status as parastatals with limited autonomy limits the improvements that can be expected. Much better results might be possible if market-oriented parastatals, such as NRL, were to be privatized.

 The ICR, while satisfactory, does not examine NRL’s longer term economic and financial viability.

 No audit is planned.