

Country	India	
Project	Tamil Nadu State Micro Hydro Power Stations Construction Project	
Borrower	President of India	
Executing Agency	Tamil Nadu Electricity Board (TNEB)	
Exchange of Notes	August 1982	
Loan Agreement	February 1983	
Loan Amount	¥2,000 million	
Loan Disbursed Amount	¥1,717 million	
Project Summary and OECF Portion		
<p>This project is to build small-capacity Kaplan water turbines (a type of turbine used for small-head hydraulic power stations) and generators downstream from three existing dams (Pykara, Lower Bhavani, and Vaigai) in the Tamil Nadu State in India, and to use the idle head of each dam to generate 70 GWh annually, thereby improving the power supply in the state.</p> <p>The ODA loan covers foreign-currency expenditures for the procurement of generators, turbines, and related equipment for this project.</p>		
Comparison of Original Plan and Actual	Plan	Actual
(1) Project Scope		
1)		} Same as left
Pykara Power Station		
• Generator	2.353MVA ×1	
• Water turbine	Kaplan type 2MW ×1	
Lower Bhavani Power Station		
• Generator	2.353MVA ×4	
• Water turbine	Kaplan type 2MW ×4	
Vaigai Power Station		
• Generator	3.53MVA ×2	
• Water turbine	Kaplan type 3MW ×2	
2) Transmission line	11KV transmission line 8km ×2 circuits	} Same as left
Pykara Power Station	110KV transmission line 10km ×1 circuit	
Lower Bhavani Power Station	22KV transmission line 10km ×2 circuits	
Vaigai Power Station	3 power stations ×1	
3) Metal work		
• Gate	3 power stations ×1	
4) Civil engineering work	3 power stations ×1	
• Building of power station		
• Water-conveyance pipe		
(2) Implementation Schedule (Construction of the project)	Aug. 1983 ~ June 1985 :23 months	
(3) Project Cost Figures in the parentheses are of OECF portion.		
• Foreign currency portion	¥2,000 million (¥2,000 million)	¥1,717 million (¥1,717 million)
• Local currency portion	Rp. 44 million	Rp. 119 million
Total Project Cost	¥3,203 million (¥2,000 million)	¥3,779 million (¥1,717 million)
Exchange rate	Rp.1 = ¥27.04	Rp. 1 = ¥17.3

Analysis and Evaluation**(1) Project Scope**

The project was implemented in accordance with the original plan.

(2) Implementation Schedule

Delays in bidding procedures, bidding evaluations, the drafting of contracts, and civil engineering work caused the implementation schedule to fall behind by approximately five years in total.

Broken down into individual factors, the bidding procedures were delayed by eight months due to revisions in the bidding documents by TNEB. It took a long time to approve the bidding evaluation results on the Indian side, and this caused another delay of approximately 15 months. Further delays of three years were incurred for the approval of the generators' drawings and the issue and obtainment of import permits in India, and test operation by drought. Thus, the majority of delays were caused by delays in the approval procedures of the Indian government and TNEB.

(3) Project Cost

These delays in the implementation schedule, coupled with inflation, cause the local currency cost of the project to triple. A breakdown of this cost overrun shows that civil engineering work accounted for the largest percentage, which increased by some 425%. However, TNEB provided additional funds for this cost overrun, and thus changes in the scope of the project were avoided and the project could be completed.

(4) Implementation Scheme

Since this project was for limited scale power generation, TNEB set up an implementation scheme under which it would be handled alongside other hydraulic power stations projects. However, taking into consideration the fact that the project's implementation ran five years late due to delays in the administrative procedures of TNEB, it is judged that more effective ways to implement the project, such as establishing a dedicated team in charge of only this project, should have been considered. Furthermore, no consultants were hired, but using consultants would probably have been effective to ensure the smooth implementation of the project.

(5) Operations and Maintenance

The fact that the equipment utilization rate as of 1995 for the three hydraulic power stations was close to 100% of the planned figures seems to demonstrate that there are no major problems in the operation and maintenance capabilities of the TNEB. On the other hand, the TNEB's net profit without government subventions is a chronic deficit, because of the result of a politically distorted charge system. Revising the charge system from the viewpoint of the effective management of the Tamil Nadu State's resources is thought to be necessary.

Project Effects and Impacts

- Efficient utilization of domestic resources
- Expansion of power generation capability (through this project, actual power generation reached 69.08 GWh in 1995)

Notes

Report Date : March 1998