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INTERNATIONAL DEVELOPMENT ASSOCIATION

REPORT AND RECOMMENDATIONS
OF THE
PRESIDENT
TO THE
EXECUTIVE DIRECTORS
ON A
PROPOSED DEVELOPMENT CREDIT
TO INDIA
FOR THE SECOND KOYNA POWER PROJECT

July 31, 1962

INTERNATIONAL DEVELOPMENT ASSOCIATION

REPORT AND RECOMMENDATIONS OF THE PRESIDENT
TO THE EXECUTIVE DIRECTORS ON A
PROPOSED DEVELOPMENT CREDIT TO THE GOVERNMENT OF INDIA
FOR THE SECOND KOYNA POWER PROJECT

1. I submit herewith the following report and recommendations on a proposed development credit to the Government of India in an amount in various currencies equivalent to \$17.5 million to assist in financing the second stage of the Koyna hydroelectric project in the State of Maharashtra.

PART I - HISTORICAL BACKGROUND

2. Construction of the Koyna development was begun in 1954. It was one of the projects of the Second Five-Year Plan and is to be substantially completed by the end of the Third Plan. In April 1959 the Bank made a loan of \$25 million to India to finance most of the foreign exchange cost of the first stage of the project, which consisted of a dam across the Koyna river, an underground power plant with four 60 MW generating sets and transmission facilities. Subsequently \$6.3 million of that loan was cancelled as a result of foreign exchange savings in the cost of constructing the first stage. So that the expansion of Koyna could be continued without interruption on the completion of the first stage, the Government of India asked the Association's assistance in financing the second stage. Appraisal missions visited India in July and August 1961 and in March 1962. Negotiations with representatives of the Government of India and the State of Maharashtra took place in July.

3. The proposed credit would increase the total of the Association's credits to India to \$170.5 million, made up as follows:

<u>Credit No.</u>	<u>Purpose</u>	<u>Amount</u> (\$ million)
3-IN	National Highways	60.0
8-IN	Tubewell Irrigation	6.0
13-IN	Shetrunji Irrigation	4.5
14-IN	Salandi Irrigation	8.0
15-IN	Punjab Drainage and Flood Protection	10.0
19-IN	Fourth DVC Project	18.5
21-IN	Sone Irrigation	15.0
	Bombay Port	18.0
23-IN	Purna Irrigation	13.0
	Second Koyna Power	17.5
		<u>170.5</u> 1/

1/ Including \$82.0 million not yet effective. As of June 30, 1962, \$6.7 million had been disbursed.

The Bank has now made 30 loans for projects in India. Their status as of June 30, 1962. was as follows:

	(\$ million)
Total loans, net of cancellations 2/	817.4
of which has been repaid	<u>95.3</u>
Total now outstanding	722.1
Amount sold 66.0	
of which has been repaid <u>45.1</u>	<u>20.9</u>
Net amount held by the Bank	701.2

2/ Including \$19.5 million not yet effective and \$191.5 million not yet disbursed.

PART II - DESCRIPTION OF THE PROPOSED CREDIT

4. The main features of the proposed credit are as follows:

Purpose: To finance about one half of the total cost of the second stage of the Koyna hydroelectric project.

Borrower: India, acting by its President.

Amount: The equivalent in various currencies of \$17.5 million.

Term of Amortization: The term of the credit would be 50 years with a grace period of 10 years. From January 15, 1973, one-half of one per cent of the principal amount would be repayable semi-annually for ten years, and one-and-one-half per cent would be repayable semi-annually commencing January 15, 1983, and ending July 15, 2012.

Payment Dates: January 15 and July 15.

Project Agreement: The Association would enter into a Project Agreement with the State of Maharashtra which will construct the project and transfer it for operation to the State Electricity Board.

PART III - LEGAL INSTRUMENTS AND LEGAL AUTHORITY

5. Attached are a draft Development Credit Agreement between India and the Association (No.1) and a draft Project Agreement between the State of Maharashtra and the Association (No.2). The draft Development Credit Agreement follows the normal pattern. The provisions of the draft Project Agreement generally follow the same pattern as the Bank's Project Agreement, 223-IN of April 8, 1959, for the first Koyna Power Project.

6. In Section 2.07 of the Project Agreement, Maharashtra undertakes to cause the rates for the sale of electricity generated by the Koyna system to be set at levels which will provide revenues sufficient to cover all operating expenses, including adequate maintenance and depreciation and taxes, and achieve a reasonable return on the facilities of the Koyna system. Pursuant to this Section, Maharashtra advises the Association in a letter (No.3) that after the first stage of the Koyna system comes into full commercial operation, but in any case not later than April 1, 1965, Maharashtra will take steps to achieve an annual return of not less than 7 per cent on net assets of the Koyna system, including work in progress, and using a straight-line method of depreciation.

7. The recommendation of the Committee provided for in Article V, Section 1(d) of the Articles of Agreement of the Association is attached (No.4).

PART IV - APPRAISAL OF THE PROPOSED CREDIT

The Project

8. A detailed appraisal of the project (TO 325 b) is attached (No.5). The project includes the construction of the Koyna dam to its ultimate height, the addition of 340 MW of generating capacity, and the extension of the transmission system. It is scheduled to be completed toward the end of 1967. The second stage will bring total generating capacity of the Koyna system to 580 MW. A third stage of the project, under initial investigation, would be the construction of a tailwater plant which would add about 100 MW capacity.

9. The total cost of the project to be financed by the proposed credit is estimated to be about \$35 million, including a foreign exchange cost of about \$14 million. The cost of the first stage is expected to be about \$91 million including \$22 million of foreign exchange. These costs are considered to be quite reasonable and would give an investment cost for the first and second stages of the Koyna development taken together of \$218 per kilowatt of installed capacity. The incremental cost of the second stage would be \$104 per kilowatt of installed capacity.

10. On completion of each unit of the scheme, the State will transfer them for operation and maintenance to the Maharashtra State Electricity Board, a corporate body constituted under the Indian Electricity (Supply) Act of 1948. The Koyna system will be integrated with the Tata Power and the Central Railway systems which serve the Bombay-Poona area. To achieve the best service and the maximum operating efficiency, the combined systems will be operated in accordance with policies determined by a committee consisting of representatives of the Maharashtra State Electricity Board, the Tata Power Companies and the Central Railway. The State has also arranged with the Tata Power Companies for their operating department to dispatch the production of the Koyna system until such time as the Association is satisfied that the Maharashtra State Electricity Board is capable of performing this function efficiently.

11. Because of the importance of the Koyna development, the State of Bombay (now Maharashtra) set up a special board, the Koyna Control

Board, to be responsible for the engineering, design and construction of the project. The Koyna Control Board retained a consortium of Swiss consulting engineering firms, Societe Generale Pour l'Industrie, Societe Anonyme Conrad Zschokke and Mr. H. Gicot, to review all designs and specifications and to supervise construction. This arrangement has been extended for the second stage.

12. As in the first stage, all the procurement of power station equipment will be through international competitive bidding. Civil works construction for the first stage has been carried out under contracts awarded in 1955 as a result of competitive bidding. With the Association's approval, extension of these contracts has been negotiated so as to avoid any gap in construction between the first and second stages.

13. The entire cost of the project is financed by annual loans from the Government of India to the State of Maharashtra. These loans are repayable over 20 years after 10 years' grace. The rate of interest is determined annually for each loan and is presently $4\frac{1}{2}$ per cent.

14. The consumption of electricity of the Bombay-Poona area accounts for almost one-fifth of the total power used in India and has been increasing at an annual rate of about 8 per cent for the last decade. This rate of increase is expected to continue. Koyna is the most economical means of providing part of the required additional power. The combined system serving the area had a maximum load of 514 MW at the end of 1961 and this is expected to double by the time the second stage of Koyna is completed. By then, Koyna is expected to provide about 40 per cent of the energy requirements of the system. Due to the continuously increasing demand for power in the area, it is expected that all the firm generating capacity from the project will be fully absorbed as soon as it is brought on line and that beyond 1967 between 80 and 100 MW of new capacity will have to be provided annually for this area.

The Economy

15. A summary of India's current economic position was included in my Report and Recommendations (IDA/R62 - 13) of July 3, 1962, on a proposed development credit to India for the Port of Bombay project.

PART V - COMPLIANCE WITH ARTICLES OF AGREEMENT

16. I am satisfied that the proposed development credit would comply with the Articles of Agreement of the Association.

PART VI - RECOMMENDATIONS

17. I recommend that the Association make available a Development Credit to India in an amount in various currencies equivalent to \$17.5 million for a total term of 50 years with service charge of 3/4 of 1 per cent per annum and on such other terms as are specified in the draft Development Credit Agreement and draft Project Agreement, and that the Executive Directors adopt a resolution to that effect in the form attached (No.6).

Eugene R. Black
President

Washington, D. C.
July 31, 1962