

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK
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AGENDA

PR-979-2
27 November 1979
Original: Spanish

Reference: Colombia. Loan proposal for the Corporación Autónoma Regional del Cauca for project on regulation of Cauca River in Salvajina (Document PR-979)

As agreed on at the November 19 meeting of the Committee of the Whole during consideration of Document PR-979, the following changes have been made:

- Paragraph 8 of the Recommendations was transferred to the proposed resolution as paragraph 8(e).
- Paragraph 9 of the Recommendations was revised and transferred as a condition to be included in the guarantee contract or other appropriate instrument. The new text appears as paragraph C in the Recommendations.

Also attached is a Management memorandum containing information on the methodology for economic analysis of multipurpose projects and a revised economic evaluation of the project on regulation of the Cauca River in Salvajina.

Please replace Appendices I and II to Document PR-979 with the new versions attached.

Reference document: PR-979

Distribution:

Board of Executive Directors
Managers and Advisors
Division Chiefs
Representative in Colombia

PROPOSED RESOLUTION

COLOMBIA. LOAN /IC-CO TO THE CORPORACION AUTONOMA REGIONAL DEL CAUCA
(Project for Regulation of the Cauca River at Salvajina)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Corporación Autónoma Regional del Cauca ("CVC"), as borrower, and the Republic of Colombia, as guarantor, for the purpose of granting the former financing to cooperate in the execution of a project consisting in the construction of a dam and related facilities in the area of the Cauca River called Salvajina, located in the Departamento del Valle, to prevent flooding, generate electric energy and reduce pollution of that river. This financing shall be subject substantially to the following conditions:

1. Amount and Currencies: Up to US\$44,000,000 or the equivalent in other currencies which are part of the inter-regional capital resources of the Bank, to pay for goods and services acquired through international competition and for such other purposes as may be specified in the loan contract. Payments of amortization and interest shall be made in the currencies disbursed.
2. Source of Funds: The inter-regional capital resources of the Bank.
3. Guarantee: Joint and several guarantee of the Republic of Colombia.
4. Credit Fee: 1-1/4% per annum on the undisbursed portion of the financing, commencing to accrue 60 days after the date of the contract and payable in dollars of the United States of America on the same dates as the interest.
5. Amortization: The borrower shall amortize the loan in a period of 20 years from the date of the contract, by means of semiannual, consecutive and, insofar as possible, equal installments. The first installment shall be paid 6 months after the scheduled date for the last disbursement of the financing.

6. Interest: 7.9% per annum, payable semiannually on principal amounts outstanding. The first payment shall be made 6 months from the date of the contract. At the request of the borrower, the resources of the financing may be used for paying the interest during the disbursement period thereof.
7. Disbursement: Total disbursement of the financing shall be made within a period of 5 years from the effective date of the contract. (3.15(a))
8. Special Conditions:
 - (a) The resources of the loan shall be utilized in their entirety by the borrower. If modifications in the legal provisions, statutes or basic regulations concerning the borrower are approved, which, in the opinion of the Bank, may substantially affect the project, the Bank may take such measures as it deems appropriate, in accordance with provisions to be set forth in the loan contract. (5.05)
 - (b) The resources of the loan shall be used to participate in the execution of a project the cost of which is estimated at the equivalent of US\$242,500,000. Consequently, the loan and guarantee contracts shall contain such provisions as the Bank deems appropriate to ensure that such additional resources as may be necessary for the complete execution of the project will be duly provided, in accordance with a schedule of investments satisfactory to the Bank, in a total amount estimated at the equivalent of US\$198,500,000, which shall include:
 - (i) the local contribution, which may not be less than the equivalent of US\$115,300,000; (ii) financing from the Overseas Economic Cooperation Fund (OECF) of Japan in an amount of 12,300,000,000 yen; and (iii) financing from suppliers in the equivalent of US\$27,300,000. (3.10 et seq.)
 - (c) Prior to the first disbursement of the financing, the borrower shall present to the Bank's satisfaction:
 - (i) evidence that it has entered into a loan contract with the OECF for an amount of 12,300,000,000 yen; (7.28)
 - (ii) evidence that the necessary legal measures have been taken to assure that: (1) the Central Hidroeléctrica del Río Anchicayá Ltda. ("CHIDRAL") will pay the borrower for the use of assets owned by the latter an amount at least equivalent to the rate of return on the revalued fixed assets referred to in clause (d)(ii) of this resolution; and 2) CHIDRAL will transfer to the borrower, as an interest-free long-term loan for the life of the contract, any cash surplus it may obtain after meeting its obligations, including those of making payments for use of assets as referred to in the preceding subparagraph, those pertaining to debt services, and those pertaining to the execution of its investment programs; (5.65)

- (iii) evidence that it has contracted for the services of: (1) a consulting firm to advise it in the execution of the project works; and (2) three individual consultants to advise it periodically, separately or jointly, in the execution of the project; (4.03 and 4.04)
- (iv) evidence that a betterment tax has been established for partial financing of the project works, and a detailed report describing the scope and contents of such tax; and (7.26)
- (v) a report on a number and socioeconomic conditions of the people to be evacuated in order to flood the lands to be covered by the reservoir and on the manner in which they will be compensated and relocated, as well as a plan and schedule for acquisition of such lands. (7.21)
- (d) The borrower and the guarantor shall take the necessary measures acceptable to the Bank so that the rates for the sale of energy from the electric system of the borrower: (i) produce revenues at least sufficient to cover all the operating expenses of the system, including those related to administration, operation, maintenance and depreciation; and (ii) yield a reasonable return on revalued net fixed assets of the system. If the application of the foregoing does not generate sufficient resources to cover the timely services of all of the borrower's obligations, the borrower and the guarantor shall take such measures as necessary to obtain the additional resources required for achieving that purpose. (5.62)
- (e) During the project execution period, the borrower shall not, without the previous authorization of the Bank, assume any new financial obligations with a term of more than one year as a result of which: (a) its long-term debt would exceed twice its net worth; and (b) its internal cash generation would be less than 1.5 times the total amount needed for the annual service of its long-term debt. (6.69)
- (f) In the acquisition of machinery, equipment and other materials for the project and in the awarding of construction contracts, the system of public bids shall be followed in each case in which the value of such acquisitions or contracts exceeds the equivalent of US\$100,000. The bidding shall be subject to a procedure to be included in an annex to the loan contract. However, the provisions of this clause will not be applicable to acquisitions of goods and awards of contracts for services to be paid out of the OECF financing and of suppliers' credit, which shall be governed by such procedures as determined by the borrower. (4.10)
- (g) The Bank shall establish such inspection procedures as it deems necessary to ensure the satisfactory execution of the project, and the borrower and the guarantor shall extend all cooperation which is required for the most effective accomplishment of this purpose. From

the amount of the financing the sum of US\$440,000 shall be allocated for credit to the accounts of the Bank to meet expenses of general inspection and supervision.

9. Conditional Provision: This resolution shall enter into effect only when the Board of Executive Directors, by resolution, has determined that the Bank has sufficient available resources in the inter-regional capital to cover the loan authorized by this resolution.

RECOMMENDATIONS

- A. It is recommended that the following conditions, to be fulfilled to the Bank's satisfaction, be included in the loan contract in addition to the conditions set forth in the proposed resolution:
1. Prior to the call for bids for each work or group of works or, if a call for bids should not be applicable, prior to the initiation of such works, the borrower shall undertake to:
 - (a) submit for the Bank's approval the plans, specifications and documents required for the construction in question and also, if applicable, the documentation pertaining to the call for bids, including the respective contract models; and
 - (b) demonstrate to the Bank that it has legal possession or the necessary rights with respect to the lands on which the project works in question are to be built, and also that it holds the pertinent right to use the water required for the project.
 2. Within a period of one year from the effective date of the loan contract, the borrower shall present to the Bank the plans and time schedules for: (a) the evacuation of the lands to be flooded by the dam with the periods in which they are scheduled to be flooded; (b) the execution of watershed protection works at the Salvajina basin; and (c) the system to collect and analyze hydrological data to assure that operation of the dam will accomplish the purposes envisaged in this project. (7.21)
 3. The following provisions shall be observed with respect to ex-post evaluation:
 - (a) Within a period of 12 months from the effective date of the loan contract, the borrower shall present to the Bank:
 - (i) The initial baseline data pertaining to the categories indicated in paragraph 8.01 of Annex A to the loan contract; and
 - (ii) A description of the system for compiling and processing the data to be used in making the annual comparisons with the initial baseline data in order to evaluate the results obtained through execution of the project. (6.44)

- (b) Beginning with the second year, counted from the effective date of the loan contract, and continuing annually until the fifth year after the date of the last disbursement of the financing, the borrower shall present to the Bank the annual comparative data referred to in the preceding paragraph. (6.45)
 - (c) At the end of the sixth year, counted from the date of the last disbursement of the financing, the borrower shall present an ex-post evaluation report on the results of the project, based on the methodology and guidelines agreed upon with the Bank. (6.46)
- 4. Beginning in 1980 and continuing throughout the project execution period, the borrower shall present to the Bank within the first 60 days of each calendar year an annual cash flow statement demonstrating that it has available the necessary resources for the project, including those from short-term borrowings contracted to cover any deficit in the financial plan for the corresponding fiscal year. (5.60)
- 5. Annually, beginning June 30, 1980, and continuing throughout the project execution period, the borrower shall present a statement of accounts evidencing that it has collected at least 70% of the amounts due and payable in the preceding year, including any balance outstanding at the start of each period, under billings for the sale of energy to CHIDRAL and for the sale of energy by CHIDRAL to the Empresa Municipal de Cali ("EMCALI"). This minimum percentage will be increased gradually by 4% a year until it reaches 85% in 1984. (5.80)
- 6. Within a period of one year from the effective date of the contract the borrower shall supply the Bank with information on the results of the application of the betterment tax, indicating the amounts levied against the agriculture and livestock sector and against beneficiaries in the industrial sector, and an approved timetable indicating the schedule for collections of the tax from beneficiaries. Beginning 18 months after that same date and continuing throughout project execution, the borrower shall report the status of collections to the Bank every six months, indicating: (a) the amount billed ; (b) the amount collected; (c) the portion of the amount billed not yet due and the amount due (indicating its age in days), (d) the balance pending collection, and (e) the amounts for which judicial collection proceedings have been instituted. (5.66)
- 7. The borrower shall undertake to present to the Bank, within a period of four years from the date of the contract, a plan for execution of the complementary works for prevention of flooding in the Cauca Valley area, indicating the execution timetable and the costs and sources of financing. (3.23)

8. The Bank may recognize as part of the additional national resources for the project, expenditures, up to the equivalent of US\$5,000,000, pertaining to infrastructure works, engineering, and preparatory work with respect to the principal construction contracts, provided that such expenditures have been incurred within the 18 months preceding the date of the loan contract and that requirements substantially similar to those set forth in the respective resolution and in the loan contract have been fulfilled with respect to such expenditures. (4.22)
 9. The financial statements of the borrower, during the life of the contract, and those of the project, during its execution, shall be presented annually to the Bank certified by the Contraloría General de la República. The first financial statement shall be those for the fiscal year in which the project is initiated. (5.17)
- B. An annex substantially similar in content to Appendix III to the loan proposal shall be included in the loan contract.
- C. In the guarantee contract, or other appropriate instrument, the guarantor and the Bank shall agree that the former shall not process any new request for authorization to allow EMCALI to assume any additional external debts if EMCALI is in arrears with CHIDRAL with respect to payment of amounts billed for electric energy within the normal collection period. For this purpose, each time EMCALI requests the above authorization, such institution shall demonstrate to the Guarantor that it will obtain all the necessary resources on a timely basis to comply with all its current obligations and to pay on time for the purchases of energy to be made in the next twelve months.

COLOMBIA - CAUCA REGULATION PROJECT IN SALVAJINA

At the November 19 session of the Board of Directors, it was requested that the Management clarify certain aspects regarding the methodology used in the economic evaluation of multipurpose projects. A brief description of this methodology follows in Section I. During the same discussion of the Salvajina Project, a number of points were raised with respect to the production costs for sugar cane, and the prices used for the agricultural products. These issues are addressed in Section II.

I. Methodology for Economic Analysis of Multipurpose Projects.-

The standard approach to the economic analysis of multipurpose projects is to identify and estimate the annual benefits and costs for each project purpose in the "with" and "without" project alternative situations. Once these flows have been constructed one proceeds to estimate the net present value (NPV) and internal rate of return (IRR), so as to determine the overall economic feasibility of the project. The optimality of the project may then be tested by studying different alternative designs for the various subprojects and for the common elements (such as a dam) to maximize the IRR or --if the current opportunity cost of capital is known-- to maximize the NPV of the overall project when discounted at that opportunity cost of capital.

The detailed analysis includes separation of costs that are directly attributable to each subproject, i.e., the difference between the cost of the project including the subproject and the cost without the subproject. The common costs are those non-separable items that are necessary for any of the purposes and that in fact serve all the purposes. A comparison of the separable costs of each purpose with the benefits attributable to that purpose should show a positive NPV (an IRR higher than the opportunity cost of capital); otherwise, an economically better project could be achieved by eliminating that subproject.

The benefits for each subproject represent the additional output generated by the subproject or the savings in resources achieved by that subproject. In all cases the situation with the subproject is compared to the situation without that subproject. For the electricity subproject the cost savings approach is used, comparing the annual investment and operating costs of the alternative electricity system (without the subproject), with those of system configuration with the subproject. In the simplest case, if there is only one alternative plant that could substitute for the hydroelectric subproject of a multipurpose project, and all the rest of the system development is the same with or without the subproject, then the savings in investment and operating costs by not building the only available alternative (e.g. the thermal plant) become the benefits for the hydroelectric subproject. The separable costs of the hydroelectric subproject are, of course, included in the investment and operating cost data. This benefit measure is equivalent to valuing the energy contribution of the electric system with the subproject at the marginal cost of the alternative electricity system.

In the case of the Salvajina hydroelectric subproject, its selection has been based on two least cost studies. The first one, performed in December 1978 by Interconexión Eléctrica S. A., considered 15 alternative system expansion plans, which concluded that the plant sequence presented in our economic evaluation represented the least cost expansion plan. The second study (July 1979) considered five alternative plans of which the best three were presented in the Project Report; these were: 1) the basic one, with Salvajina in January 1984; 2) a plan with a coal-electric plant substituting for Salvajina in January 1984; 3) Salvajina in January 1985. This study again concluded that the first alternative was the least cost solution to the expansion of the system. The benefits of the hydro subproject were taken as the system cost savings with respect to the next best alternative without Salvajina.

II. Revision to the Salvajina Project Economic Evaluation.-

The technical report presented to the board contained a transcription error in the costs used for the with project production costs of sugar cane. Unfortunately, this transcription error carried over to the input forms that were used to compute the project NPV and IRR. Once this correction is made, the project's NPV changes from US\$ -0.8 millions to -13.2 millions and the IRR from 11.95 to 10.6 percent. The table below summarizes the NPV of the project costs and benefits.

Present Values of the Project Costs and Benefits a/
(million of January 1979 US\$)

<u>Item</u>	<u>Costs</u>	<u>Benefits</u>	<u>Net Benefits</u>
Common facilities	89.0	-	- 89.0
Agriculture	54.5	49.8	- 4.7
Hydropower	45.1	108.3	63.2
Water quality	-	17.3	17.3
TOTAL	188.6	175.4	- 13.2

a/ Discounted with a 12% discount rate.

It is the position of the Management that despite the apparent low rate of return, the project should be financed. A major consideration in this recommendation is that during the course of the analysis, there were a number of uncertainties regarding how best to represent certain project costs and benefits. The numbers finally used in these cases were chosen conservatively.

An example of this is with respect to the "without project" costs that would be incurred in making new lands suitable for agricultural use through construction of dikes and related civil works. Information received since the analysis was performed demonstrates that these costs were underestimated. If these new costs of construction of US\$ 700 per hectare, and annual operations and maintenance costs of US\$ 30 per hectare are included, then the project rate of return would exceed 12 percent. The purpose of this discussion is not to suggest that the analysis be further revised, but to show the project's sensitivity to variables that were chosen conservatively.

Finally a sensitivity analysis was performed to determine the effect of adopting a more (less) optimistic set of long run prices. If prices are increased (decreased) 10 percent, the IRR increases (decreases) about 0.6 of a percentage point. Furthermore, the adopted prices were reviewed with more recent data, concluding that these - although conservative - were adequate in view of the uncertainties prevailing in the long run.