FEASIBILITY STUDY FOR THE IBERO-AMERICAN CLIMATE PROJECT

(TC-95-08-43-5-RG)

EXECUTIVE SUMMARY

REQUESTER: Governments of Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay, Peru, Uruguay, and Venezuela.

EXECUTING AGENCY: World Meteorological Organization (WMO) through its Regional Office for Latin America, with headquarters in Asunción, Paraguay.

BENEFICIARIES: The national meteorological and hydrologic institutions (NMHIs) of the requesting countries.

FINANCING:

IDB:(FSO)	US$ 700,000	(local currencies)
Evergreen Fund:	US$ 500,000	
Spain:	US$ 700,000	
Canada:	US$ 345,000	
WMO:	US$ 100,000	(in kind)
NMHIs:	US$ 100,000	(in kind)
Total:	**US$2,445,000**	

TERMS: From the signing of the letter of agreement:

Execution period:	18 months
Disbursement period:	24 months

ENVIRONMENTAL CLASSIFICATION: The Environment Committee, at its meeting of November 14, 1995, classified this as a Category II operation.

OBJECTIVES: The objective of this technical cooperation operation is to conduct feasibility and design studies for the regional Ibero-American climate project. The main objective of the project, whose feasibility studies and designs will be financed through this operation, is to contribute to the modernization of the national meteorological and hydrologic institutions (NMHIs) to make them capable of providing the services that the main users in their respective countries demand.

DESCRIPTION: The studies will cover the following components: (i) design of the technical components of the Ibero-American climate project (expansion and modernization of existing observation networks, modernization of existing communications systems, modernization of existing climatological data banks, and strengthening of the institutional capacities of the NMHIs); (ii) design of the institutional execution mechanism;

(iii) design of a managerial programming and follow-up system for the project; and (iv) assessment of the technical, environmental, socioeconomic, financial, legal, and political feasibility of the project. For purposes of the above, the executing agency will hire a director for the study and the necessary consulting services, pursuant to the regulations of the various organizations participating in the financing of the studies. A steering committee will be set up comprising representatives of the organizations financing the studies, the WMO, and the NMHIs, which will meet periodically and will be coordinated by the executing agency.

SPECIAL CONDITIONS:

A. Conditions precedent to the first disbursement

Prior to the first disbursement of the contribution, the executing agency will submit the following to the Bank's satisfaction:

1. the final terms of reference for the hiring of all the consulting services required for the study;

2. selection of the director for the study by the WMO;

3. evidence that the WMO has signed agreements with the NMHIs of at least seven participating countries, that clearly specify the contributions and obligations of each, for execution of the studies;

4. evidence that executing units for the technical cooperation operation exist or have been set up within each NMHI, with the authority, staff, and appropriate administrative and logistical facilities for the studies to progress properly; and

5. evidence that the WMO has selected the consultants to be financed with contributions from the Bank, the Evergreen Fund, and the Instituto Español de Comercio Exterior [Spanish Foreign Trade Institute] (ICEX) and that it has signed the respective agreements with the Instituto Nacional de Meteorología [National Meteorological Institute] (INM) of Spain and the Canadian International Development Agency (CIDA), to provide experts and consulting services to be financed by them, pursuant to the final terms of reference agreed upon with the Bank.

B. Other special conditions

1. Three months after condition A(3) above has been fulfilled, the executing agency will submit evidence that similar agreements have been signed with the NMHIs of the remaining participating countries.

BENEFITS: The operation will result in the design of a viable and sustainable project, for which financing can be arranged, that will allow the NMHIs to better gather and transmit hydrometeorological data to improve their meteorological prediction capacity. The successful subsequent execution of such a project would directly benefit the main sectors of users of such services: national agencies responsible for civil protection in the face of hydrometeorological natural disasters, civil aviation and the transportation sector in general, energy production and water management sectors, agriculture, fisheries, insurance, tourism, and environmental protection.

EXCEPTIONS TO THE BANK'S PROCEDURES: The plan is to designate the WMO as executing agency for the studies, at the request of the NMHIs and by mutual agreement of the Canadian and Spanish donor agencies, inasmuch as the world organization specializes in climate and meteorology, represents the countries on these matters, and has experience in coordinating this type of activity in the hemisphere. For the hiring of consulting services to be financed with resources from the different sources, including the Bank and the Evergreen Fund, the WMO will follow the procedures established thereby.

RISKS: The main risk of the technical cooperation operation is the number of countries and organizations participating, which will require efficient and effective coordination and suitable technical support to guarantee the quality of the study. The participation of the WMO as executing agency for the operation ensures that the above-mentioned risk will be minimal. The WMO is a specialized agency of the United Nations focusing on climate and meteorology. Through its main bodies, i.e., the executive council, regional associations, and technical committees, in which all the hydrometeorological institutions of the member countries participate, it maintains close coordination and technical supervision of approved programs.

RESPONSIBILITY AT THE BANK: Technical: SDS/ENV; basic: INT/RTC. The Country Office in Paraguay will be responsible for project administration and supervision.

I. BACKGROUND

1.1 The United Nations Framework Convention on Climate Change, signed at the Rio Summit, established that all the parties must promote and cooperate in scientific, technological, technical, socioeconomic, and other research, systematic observation and development of data archives related to the climate system, to further the understanding of the causes, effects, scope, and timing of climate change and the economic and social consequences of the various response strategies and to reduce or eliminate the areas of uncertainty that still remain in this regard.

1.2 In the context of their meteorological activities and with the support of the World Meteorological Organization (WMO), the countries are trying to cover their national territory as well as possible and to address regional needs. The operation of the national networks of meteorological stations in each country has significant repercussions on the other countries, which receive data and information through the Global Telecommunications System (GTS). In South America, the responsibilities related to the GTS are divided among three Regional Telecommunications Hubs (RTH), set up in Buenos Aires, Argentina; Brasilia, Brazil; and Maracay, Venezuela. There are other related projects under way in Ibero-America being conducted with the assistance of the WMO, such as ozone, greenhouse gas, and ultraviolet gas (UV-B) monitoring in the five countries of the Southern Cone (Argentina, Brazil, Chile, Paraguay, and Uruguay) financed by the UNDP/GEF; the Voluntary Co-operation Programme, with emphasis on regional issues in the context of the World Weather Watch; various WMO projects that are being executed under the UNDP framework in Brazil, Colombia, and Venezuela; etc.

1.3 Nevertheless, the observation, communications, and data processing systems in Ibero-America are incomplete, with large areas remaining uncovered, particularly in regions that are difficult to reach. The users' requirements in terms of data, information, and meteorological and water resource products for planning and execution of programs and projects for sustainable development are substantial and urgent.

1.4 On July 28, 1993, a meeting was held at the headquarters of the Inter-American Development Bank with representatives from the WMO and the Instituto Nacional de Meteorología [National Meteorological Institute] (INM) of Spain to discuss Ibero-America's needs in the area of meteorology.

1.5 At the time, interest was expressed regarding the idea of a project to contribute to satisfying those needs, to be known as Ibero-American climate project, which would be of undeniable short-, medium-, and long-term importance to the region as it would make it possible for more accurate meteorological predictions to be made that would without a doubt justify the operation socially and

economically in terms of early warning on natural disasters (droughts, floods, etc.), including the El Niño phenomenon and its implications. The project would also be significant for agriculture, maritime and land transportation, air travel, water resource planning and management, environmental and natural resource conservation for sustainable development, etc. Lastly, it would lay the foundations for monitoring global climate change over the long term (global warming, for example), fulfilling the mandates expressed at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992.

1.6 The project would contribute effectively to resolving the region's difficulties in making very short-term (hours), short-term (up to two days), medium-term (up to 10 days), and long-term predictions. For this purpose, the following measures need to be taken: (i) expand and modernize the existing observation and data collection networks on the behavior of the atmosphere, which supply essential raw material for subsequent prediction making; (ii) modernize existing communications systems of the national meteorological and hydrologic institutions (NMHIs) for the transfer of data both within each country and regionally; (iii) modernize the existing climatological data banks of the NMHIs in each country and set up at least one regional center with the capacity to archive all existing climatological information and serve as necessary support for the modeling and prediction activities; and (iv) develop and improve the institutional capacities of the NMHIs, including staff development and training.

1.7 At their Eleventh Meeting, held in Asunción, Paraguay, in September 1993, the countries in Regional Association III of the WMO (AR-III) adopted Resolution 10/1 supporting the Ibero-American climate project. This support was ratified at the Twelfth Congress of the WMO, held in Geneva, Switzerland, in June 1995.

1.8 In 1994, the countries submitted requests to the Bank so that feasibility studies and project design could be performed. The requests were ratified in 1995 and interest was expressed in principle for the project to be included in the Bank's new operational programs for 1997 and 1998, depending on the results of the feasibility study.

II. OBJECTIVES AND GENERAL DESCRIPTION OF THE IBERO-AMERICAN CLIMATE PROJECT, WHOSE FEASIBILITY STUDIES AND DESIGN WOULD BE FINANCED UNDER THIS TECHNICAL COOPERATION OPERATION

A. Objectives of the Ibero-American climate project

2.1 The general objective of the project is to develop a system capable of providing the most reliable and detailed predictions possible on the behavior of meteorological phenomena and the climate in the

countries of Ibero-America, in order to take advantage of this natural resource to contribute to the economic and social development of each country in the region.

2.2 The specific objectives are: (i) protection in the face of damaging atmospheric phenomena, through better very short-term (hours), short-term (up to two days), medium-term (up to 10 days), and long-term predictions on the weather and the climate; and (ii) social and economic benefits from knowledge of the weather and the climate, through a more precise and stringent characterization of their behavior.

B. Components of the Ibero-American climate project

2.3 The project would be comprised of the following main components:

a. Expansion and modernization of existing atmospheric behavior observation and data retrieval networks, the suppliers of essential raw material needed for making predictions.

b. Modernization of existing communications systems for the transfer of data at the NMHIs within each country and regionally.

c. Modernization of existing climatological data banks of the NMHIs in each country and creation of the regional capacity to archive all the existing climatological information and carry out modeling and prediction activities.

d. Strengthening of the institutional capacities of the NMHIs, including implementation of effective systems for communicating with users for identification of their needs in terms of meteorological data, predictions, methods and channels of communication to have the data arrive at the proper destination on a timely basis; development of cost recovery systems to guarantee the sustainability of the services; staff development and training; and equipment modernization.

2.4 The third of these components contains the characteristics required to provide the inputs for the numerical models used for climatological and meteorological predictions.

2.5 Although these elements are necessary, they are not sufficient. An observation system is therefore required that will provide information on the actual behavior of the climatological system, to feed the data banks, and increasingly precise knowledge of the natural phenomena that affect the climate, a goal that is expected to be achieved by the project through components 1 and 2.

2.6 Moreover, the greatest limitation on climate studies in this region and elsewhere is precisely the alarming shortage of reliable data on the actual behavior of the climatological system, which is also why the simultaneous execution of components 1, 2, and 3 of this

project will provide decisive support towards accomplishment of this task, since they are the only way to ensure the retrieval, collection, review, and archiving of the data needed to feed the aforementioned studies.

2.7 The above could not be achieved without the proper capacity of the NMHIs, through teamwork and properly trained human resources, as financially sound service institutions working for the community, which is the objective of component 4.

2.8 The project will last five years.

III. OBJECTIVES OF THE TECHNICAL COOPERATION OPERATION

3.1 **General objective**

a. To carry out the feasibility study and design of the Ibero-American climate project, specifying the characteristics of its components for its execution, operation, and follow-up.

3.2 **Specific objectives**

a. Design all the components – technical as well as institutional – of the project.

b. Determine the technical, environmental, socioeconomic, financial, institutional, legal, and political feasibility of the Ibero-American climate project.

IV. SCOPE OF THE TECHNICAL COOPERATION OPERATION

4.1 **Activities**: The executing agency will coordinate and be responsible for the following activities:

a. Preparation of the final terms of reference for the hiring of the consulting services required for the study.

b. Appointment of the study director, in consultation with the steering committee (paragraph 6.4).

c. Preparation of the detailed draft work plan for hiring consultants and performing the studies, on the basis of the terms of reference agreed upon by the steering committee.

d. Hiring of international consultants pursuant to the policies of the various organizations financing the studies.

e. Approval of the detailed work plan by the steering committee within 30 days of the start of the operation.

f. Visit by the study director to the participating countries to familiarize himself with the institutions and staff of the beneficiary institutions and other public and private agencies important to the project and to identify candidates for local support staff, in consultation with the NMHIs.

g. Hiring of local support staff.

h. Initial visit to the countries by the main technical group of consultants, interviews with staff of the participating executing agencies and other pertinent institutions. Gathering of significant data and information.

i. Analysis of the data and information and diagnosis of the situation in the region and in each country with regard to each component of the project.

j. Preparation and presentation of the first report (diagnosis).

k. Preparation and analysis of alternatives. Development of selected alternative.

l. Preparation and presentation of second report (analysis of alternatives and selected alternative).

m. Visit by the technical group of consultants (including experts, as required) to participating countries to discuss and validate preliminary proposals with executing agencies and other pertinent institutions.

n. Review and/or adjustment of the selected alternative and preparation of final proposal.

o. Preparation and presentation of third report (draft final report) for comments by local executing agencies and steering committee.

p. Review of draft final report in the light of comments received. Preparation and presentation of final report.

4.2 **Design**: The executing agency will be responsible for the executive design of all project components, both technical and institutional. It includes the national and regional execution plan, bidding documents and conditions for procurement of equipment and contracting of necessary civil works. It also includes the detailed estimate of costs, semiannual schedule of activities, semiannual schedule for material and financial execution, semiannual schedule of bids and procurement, sources of financing,

origin of counterpart funds, draft agreements, etc. The design will include the project's operating regulations, at the national level for the participating countries as well as at the regional level.

4.3 **Feasibility**: The executing agency will be responsible for conducting the feasibility analysis of each alternative considered, covering the following areas: technical, environmental, socioeconomic, financial, institutional, legal, and political. On the basis of such analyses, the best alternative will be selected and justified.

V. PLACE AND DURATION

5.1 **Place**

a. The project will be sized to take place in 13 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay, Peru, Uruguay, and Venezuela). The 13 countries have expressed their interest in the project to the IDB in writing. The feasibility study and design will be carried out in detail for those 13 countries.

5.2 **Duration**

a. The study is estimated to last 18 months and the disbursement period, 24 months.

VI. TECHNICAL COOPERATION OPERATION PLAN OF EXECUTION

6.1 The World Meteorological Organization (WMO), through its Regional Office for Latin America, in Asunción, Paraguay, will be designated the executing agency for the operation. The national meteorological and hydrologic institutions (NMHIs) in each of the participating countries will be the counterparts. Annex I of the technical document contains additional information regarding the WMO and the NMHIs.

6.2 The executing agency will hire a study director and the necessary consulting services, pursuant to the policies of the various organizations financing the studies. The terms of reference for the consulting services are included in Annex II of the technical document.

6.3 The NMHIs will provide local counterpart technical, administrative, and support staff as well as any necessary information and logistical support for carrying out the feasibility studies and

design of the project in their respective countries. They will also be in charge of liaison with the organizations, technical staff, nongovernmental organizations, and local staff required to conduct the studies.

6.4 In addition, a steering committee will be established, made up of representatives of the organizations providing financing for the studies, the WMO, and the NMHIs, which will meet periodically in order to adopt, by common consent, whatever measures are necessary for the smooth conduct of the studies. The committee, which will be coordinated by the executing agency, will be set up after this plan of operations is approved by the Bank's Loan Committee and its functions will be to: (i) approve the actions precedent to the first disbursement, including the final terms of reference for hiring all the consultants required for the study, the proposal for the selection of the study director and other consultants, and the agreements with the NMHIs, the INM; and CIDA; and (ii) review and approve the executing agency's reports, review the progress made in the study, and, if necessary, agree on the corrective measures or actions required to fulfill its objectives.

6.5 The logical framework for the study appears in Annex III.

VII. SCHEDULE OF EXECUTION

7.1 The study would be comprised of four phases, as follows:

Phase I: 30 days, culminating in the detailed work plan.

Phase II: seven months, culminating in the diagnostic report.

Phase III: four months, culminating in the preliminary report on alternatives and proposed alternative.

Phase IV: six months, culminating in the final report.

7.2 The detailed timetable of activities is attached as Annex II.

VIII. BUDGET

8.1 The total cost of the technical cooperation operation is estimated at US$2,445,000 equivalent. The Bank's contribution would amount to US$700,000 equivalent, from the resources of the Fund for Special Operations, in the local currencies of Argentina, Bolivia, Brazil, Chile, Mexico, Paraguay, and Peru. These resources would be used to

hire approximately 25 person-months 1/ in the form of international consulting services from the respective countries in the fields of hydrology, economics, law, institutional and financial analysis, and programming and follow-up; per diems and travel; approximately 12 person-months in the form of local experts; 60 person-months in the form of assistants; and publication expenses.

8.2 The local currencies of Argentina, Brazil, and Mexico, amounting to approximately US$200,000 equivalent each, would be used for support staff and publications in each country, for the hiring of consultants from the respective countries, and contingencies. The local currencies of Bolivia, Chile, Paraguay, and Peru, amounting to approximately US$25,000 equivalent each, would be used for support staff, publications, and contingencies in each country. The final amounts to be used will be established in agreements that the executing agency will sign with each NMHI as a condition precedent to the first disbursement.

8.3 The Evergreen Fund, established by the United States Trade and Development Agency, would be providing US$500,000, to be administered by the Bank and used to defray the cost of approximately 26 person-months in the form of United States consultants, which may include staff from the National Oceanic and Atmospheric Administration (NOAA), in the fields of meteorology and climatology, remote sensing, modernization of data processing and transmission systems, environment, strengthening of the technical capacity of the NMHIs; and approximately six person-months in the form of local experts.

8.4 The contribution from Spain will total US$700,000 equivalent, from the funds of the Instituto Español de Comercio Exterior [Spanish Foreign Trade Institute] (ICEX) in the context of the Quincentennial Agreement, and contributions from the Instituto Nacional de Meteorología [National Meteorological Institute] and the Spanish Telephone Company. This contribution will be used for some 37 person-months of Spanish consultants in the fields of meteorology and climatology, observation networks, communications systems, transmission systems and data retrieval, and strengthening of the institutional capacity of the NMHIs; per diems and travel.

8.5 Canada, through the Canadian International Development Agency (CIDA) and Delcan International Corporation, will contribute US$345,000 equivalent in the form of some 24 person-months of consulting services in the fields of communications and information

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1/ The number of person-months of international consulting services has been estimated in all cases assuming the normal rates and average overhead (approximately 90%) for consulting firms. The number of person-months could increase depending on who supplies the consultants.

technology; per diems and travel; local support; communications and reports.

8.6 The WMO's local contribution in kind will amount to the equivalent of US$100,000 in the form of professional staff, administrative expenses, and logistical support at its regional offices in Asunción. The counterpart contribution in kind from the countries, through the NMHIs, would total US$100,000 equivalent in local staff and administrative and logistical support. It is estimated that the local contributions per country, on average, will total some US$8,000, which includes six person-months in the form of support staff, supply of data, communications expenses, and contingencies. The exact amount per country will be set forth in the agreements that the executing agency will sign with each participating NMHI, as a condition precedent to the first disbursement.

8.7 The consolidated budget and estimated schedule of financial execution are presented below.

CONSOLIDATED BUDGET (US$000s)							
CATEGORY	IDB	EF	SPAIN	CANADA	WMO	NMHIs	TOTAL
1. CONSULTANCIES	**558.5**	**450.6**	**662.4**	**298.0**			**1,969.5**
1.1 Remuneration	558.5	450.6	662.4	298.0			1,969.5
- Fees	236.0	215.0	296.0	147.0			894.0
- Per diems, international consultants	135.0	55.6	100.0	24.0			314.6
- Direct costs	22.5			29.0			51.5
- Overhead 2/	165.0	180.0	266.4	98.0			709.4
1.9 Other							
6. GENERAL SUPPORT	**60.0**			**8.0**	**90.0**	**90.0**	**248.0**
6.2 Furniture and materials					10.0		10.0
6.3 Equipment					10.0		10.0
6.4 Supplies					10.0	12.0	22.0
6.6 Support staff	60.0			4.0	50.0	54.0	168.0
6.8 Communications				4.0	10.0	24.0	38.0
7. PUBLICATIONS	**15.0**			**5.0**			**20.0**
7.1 Preliminary printing costs	5.0			5.0			10.0
7.3 Printing	5.0						5.0
7.4 Distribution	5.0						5.0
98. CONTINGENCIES (10%)	**66.5**	**49.4**	**37.6**	**34.0**	**10.0**	**10.0**	**207.5**
GENERAL TOTAL	**700.0**	**500.0**	**700.0**	**345.0**	**100.0**	**100.0**	**2,445.0**

2/ This overhead includes 7% related to the executing agency's administration costs.

ESTIMATED SCHEDULE OF FINANCIAL EXECUTION (US$000s)				
CONTRIBUTION	SEMESTER 1	SEMESTER 2	SEMESTER 3	TOTAL
IDB	210	245	245	700
EF	150	175	175	500
SPAIN	210	245	245	700
CANADA	110	118	117	345
WMO	30	40	30	100
NMHIs	30	40	30	100
TOTAL	**740**	**863**	**842**	**2,445**

IX. JUSTIFICATION

9.1 The prediction of future weather and climatology, the latter understood as the analysis of climate and its patterns, are necessarily based on a very complex infrastructure for observation of atmospheric behavior, telecommunications, and data processing. They cover a wide range of multisector applications and have great impact not only on the national economy but on quality of life.

9.2 Execution of the project and application and use of generated output will clearly be of great benefit to civil protection programs, agriculture, the maritime and aeronautics sectors, the environment, public works, natural and energy resources, social communications media, tourism, traffic, etc.

9.3 One of the main concerns of the governments is to ensure effective and timely prediction of adverse meteorological phenomena, understood as those that could affect human safety and lives (intense precipitation, floods and landslides, high winds, etc.). The project provides the means for expanding knowledge about these phenomena and improving predictions. The NMHIs, in close cooperation with the civil protection institutions, will establish or improve coordination of warnings and emergency plans, channel predictions in a better way, and systematically develop methods and procedures related to meteorology and required for civil protection.

9.4 The meteorological information is of great benefit to farmers, primarily in terms of warnings of high winds, storms, freezes, and droughts that can ruin crops. Medium-term predictions make it possible to plan for sowing, harvesting, and storage tasks, while the short-term predictions help with irrigation and cultivation. Close cooperation between the users, including transporters, makes it possible to search for systems and practices to transport

agricultural products to market more quickly and safely or to identify the best storage conditions in view of the humidity.

9.5 The benefits in the forestry sector are becoming increasingly clear, especially with regard to the fight against forest fires. The NMHIs for their part provide risk ratios and predictions on when appropriate conditions are present for fires to be set based on anticipated weather conditions. In terms of fire extinguishing tasks, predictions on the local behavior of specific meteorological parameters, such as wind direction and intensity, temperature, rain, etc., have a growing impact, and also provide guidance to crews working to extinguish the fires.

9.6 The high seas and coastal maritime prediction bulletins are of great benefit, especially for fishery activities, in that they give vessels fishing in a given zone sufficient notice of approaching storms. The meteorological services support fishery activities in two ways: protection of fishing vessels and guidance on catches, based on atmospheric and oceanic conditions. In addition to the above, there are clear benefits for maritime transportation and leisure activities that involve navigation.

9.7 Commercial and general aviation as well as related sports activities also benefit from meteorological information. Airport predictions and atmospheric monitoring of each airport are vital. In addition to observation, encoding, and internal and external dissemination of meteorological characteristics at aircraft takeoff and landing points, information needed for the flights is provided through data and aeronautical meteorological cartography. The benefits in terms of flight safety and decisions on optimal routes to save fuel are enormous.

9.8 The impact and benefit of meteorological and hydrologic services in predicting the behavior of factors involved in pollution – transportation and most likely trajectories – become clearer every day.

9.9 The activities of the NMHIs fall within the broadest framework of actions and projects aimed at a better understanding of the physical processes related to the water cycle and the inventory of hydrometeorological resources, leading to better management of water resources.

9.10 The impact of meteorological and hydrologic bulletins, notices, and warnings through the mass communications media benefit the entire country. Insurance companies, judicial authorities, building and engineering companies, universities, hydroelectric companies, and the energy sector are other users that benefit from better meteorological and hydrologic services.

9.11 For the above, it is essential, however, that the NMHIs modernize and adapt to changing conditions in the region and that they be able to face the fact that public resources to maintain them are

increasingly scarce. While public investment in the sector is justified because of the benefits that society in general derives, as discussed above, it is also undeniable that many services could bring in real income from important segments of users in the private sector. Obviously, the services provided have to be the ones the users demand and of the required quality and timeliness to produce the desired benefits.

9.12 This technical cooperation operation will make it possible to design a project that could raise the NMHIs to this level and that is viable not only from the technical standpoint but also from the environmental, socioeconomic, financial, institutional, political, and legal standpoints, a project that could then be presented to both national and international agencies for subsequent financing.

X. REPORTS

10.1 The executing agency will submit the following reports to the IDB and to the steering committee:

a. Detailed work plan, within 30 days from the start of the study, containing a detailed timetable of activities connected with the participation of each local and international individual consultant who will be on the project team, travel, reports, etc.

b. Interim reports: (i) a first interim report containing the results of the first technical visit to the countries and an assessment of the situation, eight months after the start of the study; and (ii) a second interim report containing the results of the analysis of alternatives and the selected alternative, 12 months after the start of the study. In addition, the executing agency will submit progress reports every other month. The minimum content of this second report is indicated in Annex IV.

c. Final report: the draft final report will be submitted for comment 16 months after the start of the study, after the second technical visit to the countries. The national institutions (NMHIs) will submit their comments within 30 days. The final report, which will take into account the comments received, will be submitted 18 months after the start of the work. The minimum content of the final report is indicated in Annex V.

XI. MONITORING AND EVALUATION

11.1 Monitoring execution of the operation will be performed through the Bank's Country Office in Paraguay and with the services of SDS/ENV and the regional environmental advisors in Argentina, Brazil, Costa Rica, Mexico, and Ecuador. In addition, meetings of the steering committee will be held prior to the first disbursement and, at the least, midway through the study, to evaluate the results obtained and schedule activities for the following period. If some of the goals or activities have not been accomplished, the causes will be evaluated and necessary corrective measures recommended.

11.2 At the end of the execution of the technical cooperation operation, the WMO will include an evaluation of the activities performed in its final report. Among other topics, the evaluation will cover the performance of the consultants and the studies overall. The difficulties encountered and the way they were resolved will be highlighted and the results achieved will be compared with those originally proposed, with an explanation of any disparity. In particular, actions that the WMO and the NMHIs undertook or propose to adopt as a consequence of the technical cooperation operation will be indicated.

FEASIBILITY AND DESIGN STUDIES FOR THE IBERO-AMERICAN CLIMATE PROJECT
(TC-95-08-43-5-RG)
LOGICAL FRAMEWORK

OBJECTIVES	INDICATORS	VERIFICATION METHODS	HYPOTHESI
OUTCOME:			
Better protection against harmful meteorological phenomena, improvement of agricultural activities, air, land and sea transportation, air travel, planning and management of water resources, better environmental and natural resources conservation and management.	The National Meteorological and Hydrologic Institutions (NMHIs) of the participating countries will be able to make better short and medium-term meteorological predictions	Number of meteorological observation networks upgraded and modernized; data transmission and communications systems modernized and able; increased capacity for regional data archiving and fast and accurate retrieval; number of technicians in the NMHIs trained	The feasibili the investmen project is demonstrated. Continued pri and commitmen Governments f the execution the investmen project, once design and feasibility s is finished

PURPOSE: (i) to design the components of the Ibero-American Climate project (ii) to analyze the technical, environmental, socioeconomic, financial, institutional, legal and political feasibility of the Ibero-American Climate project	All designed technical components of the project (upgraded and modernized observation networks, modernized data transfer and communication systems, modernized data bases and retrieval systems, and strengthened capacity of the NMHIs) are adequate to the needs and capabilities of the participating countries and conform to internationally accepted standards as set forth by the WMO. All possible negative environmental impacts are analyzed and adequate mitigation measures are included, if needed All economic indicators at a level acceptable to the Bank are evaluated and beneficiaries are identified Required counterpart funding is available for the project and beyond, to guarantee sustainability The proposed execution scheme is within possible boundaries as determined by the capabilities, legal framework and political objectives of all countries, both internally and internationally	A Steering Committee will be formed with representatives from all donors, the Executing Agency and the NMHIs. The Committee will approve activities prior to first disbursement, will review and approve the reports produced by the Executing Agency and will meet periodically to agree on measures necessary to ensure that the objectives of the study are met.	That Executin Agency and th counterpart N demonstrate capacity to c out the vario activities on timely manner

COMPONENTS: 1. Technical design of the project components 2. Design of the institutional execution mechanism 2.1 Design of the financing mechanism for the project 2.2 Analysis of technical, environmental, socioeconomic, financial, institutional, legal, and political feasibility 2.3 Design of a managerial programming and follow-up system 2.4 analysis of project risks and solutions, risks of natural disasters, participation of women, participation of beneficiaries and NGOs, and contribution to poverty alleviation	A Project Director will be hired by the Executing Agency. The Executing Agency will also hire all the necessary consulting services following the requirements and procedures of the donors and will secure all necessary arrangements and formal agreements with the NMHIs and other participating institutions, such as the Spanish National Meteorological Institute and NOAA. The Executing Agency will coordinate all work and inputs from the various participants and produce the following reports: (i) detailed workplan 30 days after initiation; (ii) first interim report with diagnosis eighth months after initiation; (iii) second interim report with analysis and selection of alternative twelve months after initiation; (iv) draft final report sixteen months after initiation; and (v) final report eighteen months after initiation of studies.	Information sources for verification will be the original draft reports and technical memoirs of the consultants, as well as the information that can be provided by the NMHIs in each of the participating countries. Also information provided by the IDB Representations and Regional Environmental Specialists and the meetings of the Steering Committee	That the Exec Agency receiv the required funding on a timely basis. That the diff consultants a counterpart N receive the required fund on a timely b That the diff consultants a NMHIs provide required inpu a timely basi
ACTIVITIES: **PREPARATION:** 1. **Final terms of reference for all required consultancies**	Previous to first disbursement	Bank and Steering Committee	Steering Comm is created WMO enables U in Regional Offi
2. **Selection of Project Director**	Previous to first disbursement	Bank and Steering Committee	Suitable candi is identified
3. **Evidence that WMO has subscribed the required agreements with the NMHIs with rights and obligations of each**	Previous to first disbursement	Bank and Steering Committee	
4. **Evidence that executing units exist or have been created in each NMHI with all required support for project execution**	Previous to first disbursement	Bank and Steering Committee and accounting of NMHIs	

5. Evidence of negotiated contracts between WMO and consultants to be hired with funding from IDB, the Evergreen Fund, and ICEX of Spain. Evidence that the required agreements for consultancies to be provided with funding from CIDA Canada and the Spanish National Meteorological Institute have been subscribed	Previous to first disbursement	Bank and Steering Committee	
PHASE I: 6. Set-up of Project Office, analysis of project scope and preparation of detailed workplan for the studies	First month	Field Office in PR	WMO enables U in Regional O
7. Approval of the workplan by the Steering Committee	First month	Bank and Steering Committee	
PHASE II: 8. Hiring of international consultants	Second and third months	Bank and Steering Committee	Suitable candidates ar identified
9. Field visit of the Project Director to the countries for briefing and identification of local consultants and support personnel in consultation with NMHIs	Second/third months	Field Offices	NMHIs are rea
10. Hiring of local personnel	Third month	Field Offices	Suitable candidates ar identified
11. First visit to the countries by the international consultants core group for data gathering	Fourth to seventh months	Field Offices	NMHIs are rea
12. Analysis and diagnosis of the existing situation in relation to each component of the study	Fourth to seven months	Design memoirs	
13. First interim report	Eight month US$1,170,000 (a)	Bank and Steering Committee	

PHASE III: 14. Elaboration of alternatives and analysis. Selection of the best alternative. Design of selected alternative	Ninth to twelfth months		Design memoirs	
15. Second interim report	Twelfth month (a)	US$ 433,000.00	Bank and Steering Committee	
PHASE IV: 16. Second visit of the international consultants to the countries for ground truth and local validation of the proposed alternative and mechanisms	Thirteenth and fourteenth months		Field Offices	NMHIs are rea
17. Revision and adjustment of the selected alternative, if needed. Elaboration of the final proposal	Fourteenth to seventeenth months		Design memoirs	
18. Draft final report	Seventeenth month		Bank and Steering Committee	
19. Revision and adjustment of draft final report according to comments by the Bank and the Steering Committee, if needed	Eighteenth month		Design memoirs	Timely commen
20. Final report	Eighteenth month (a)	US$ 842,000.00	Bank and Steering Committee	

(a) NOTE:
These are estimated expenditures based on the sixth month disbursement schedule. Actual expenditures may vary according to payment conditions negotiated by the Executing Agency with the consultants. The schedule for actual expenditures will be elaborated by the Executing Agency.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE EXECUTION OF A FEASIBILITY STUDY OF THE IBEROAMERICAN CLIMATE PROJECT

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the World Meteorological Organization, for the execution of a feasibility study of the iberoamerican climate project.

2. That up to the equivalent of US$700,000 in local currency, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE EXECUTION OF A FEASIBILITY STUDY OF THE IBEROAMERICAN CLIMATE PROJECT

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the World Meteorological Organization, for the execution of a feasibility study of the iberoamerican climate project.

2. That up to the sum of US$500,000, is authorized for the purpose of this resolution, chargeable to the U.S. Evergreen Fund for Consultants account.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.