

PROGRAM FOR RECONSTRUCTION OF INFRASTRUCTURE DAMAGED BY "EL NIÑO"

(PE-0198)

EXECUTIVE SUMMARY

Borrower and guarantor:	Republic of Peru	
Executing agency:	Ministry of Economy and Finance (MEF), through the Office of Public Investment (ODI)	
Amount and source:	IDB: (OC)	US\$120 million
	Local:	US\$ 51 million
	Total:	US\$171 million
Financial terms and conditions:	Amortization period:	25 years
	Grace period:	4 years
	Commitment period:	3 years
	Disbursement period:	3.5 years
	Interest rate: variable	variable
	Inspection and supervision:	1%
	Credit fee:	0.75%
	Currency:	U.S. dollars from the Single Currency Facility
Objectives:	The general objective of the program is to normalize the economic and social development of the departments affected by the El Niño phenomenon. The specific objective is to carry out the reconstruction of physical infrastructure works and resumption of services affected by El Niño, in the sectors of transportation, sanitation, education and health, in the departments that were formally declared by the government to be in a state of emergency.	
Description:	The program includes the financing of the following specific works:	
	1. Component 1: Transportation sector (US\$56.3 million)	
	a. Reconstruction of three sections of major highways: Lambayeque-Bayovar Bypass-Piura; Sullana-Talara-Los Organos and Los Organos-Aguas Verdes.	

- b. Rural road infrastructure: reconstruction of 75 small works grouped into four bid packages.
- c. Urban infrastructure: reconstruction of 19 small works, such as streets and sidewalks in five departments, grouped into four bid packages.
- d. Riverbank reinforcement to support road infrastructure: reconstruction of 37 works, such as concrete, earth or rock walls to protect certain portions of the road infrastructure and certain critical areas in small cities. These works have been grouped into four bid packages.

2. Component 2: Sanitation sector (US\$19.9 million)

This involves the repair and/or reconstruction of 395 small works, such as collectors and pumping mains, rehabilitation of wells and pumping stations, replacement of water and reservoir systems, in different departments. For purposes of contracting and execution, these works have been grouped into four packages.

3. Component 3: Education and health sectors (US\$30.4 million)

- a. Repair and/or reconstruction of 94 health-care facilities (clinics and health-care centers) in four departments, grouped into two bid packages.
- b. Repair and/or reconstruction of 254 educational centers in 11 departments, grouped into eight bid packages.

The Bank's country and sector strategy:

The proposed program is consistent with the Bank's policy on natural and unexpected disasters (OP-704), under the terms of which the Bank supported Peru in the disaster-mitigation and emergency stages through loan 1058/OC-PE, and in part of the reconstruction stage. The purpose of the proposed financing is to support the country in the reconstruction of the remaining works in the aforementioned sectors.

Environmental and social review:

The Committee on Environment and Social Impact (CESI) did not present special recommendations to supplement the monitoring system that has already been adopted with the program under way.

Benefits:

The program will allow for speedier reconstruction of works affected by El Niño than could be carried out without external financing. The reconstruction activities, in turn, will allow for economic recovery and a return to economic and social development in the departments most affected by El Niño. Lastly, the program will directly benefit the population living in poverty in the program's service areas, according to the country's poverty map.

Risks: One possible risk is that the reconstruction of works under the jurisdiction of regional and local governments could suffer delays due to potential lack of coordination between these entities and the subexecuting agencies. This risk is minimized due to the high priority the governments attach to the reconstruction of the works proposed in the program.

Another possible risk of the program is that, given the large number of small-scale works in various sectors, there could be delays in execution. This risk is minimized by the selection of subexecuting agencies with extensive experience in the contracting of works under their responsibility, and the grouping of works into specific bid packages. Further, the lessons learned during the execution of program 1058/OC-PE have made it possible to incorporate the experience into the execution of the proposed program, particularly in reference to the contracting processes, and this will also help expedite its implementation.

**Special
contractual
clauses:**

Prior to the first disbursement:

- a. Agreements are to be signed with all subexecuting agencies that will be implementing activities in 2000, setting out responsibilities for carrying out the works, including maintenance (par. 3.7).
- b. Environmental consulting services will be contracted, in order to strengthen the monitoring capacity of the program coordinating unit (PCU) and of the subexecuting agencies, and the terms of reference for environmental audits of the emergency projects financed with loan 1058/OC-PE will be presented (par. 3.36).

Within three months after the first disbursement, the maintenance plans of the largest sanitation utilities (Tumbes, Piura, Chiclayo, and Trujillo) benefiting under the program are to be presented to the Bank (par. 3.17).

Within 30 days after the fiscal year-end, the external auditing firm must have been hired to perform the financial and operational audit (par. 3.35).

**Poverty-
targeting and
social sector
classification:**

This operation qualifies as a social equity enhancing project, as described in the indicative targets for Bank activities mandated by the Eighth Replenishment (document AB-1704). Likewise, this operation qualifies as a poverty-targeted investment (PTI), since it meets the geographic criterion according to which the program's activities will be executed in areas of the country identified as poor (par. 2.20).

Exceptions to Bank policy: None

Procurement: The procurement of goods and related services, construction of civil works, as well as contracting of consulting services financed with program resources will be carried out in accordance with the Bank's standard procedures for procurement and for the selection and contracting of consultants.

With the exception of the three largest transportation sector works, all of the smaller works within each sector have been grouped into 26 bid packages (see Annex II).

Thresholds above which international competitive bidding will be mandatory will be US\$5 million for civil works and US\$350,000 for associated goods and services. The threshold for works projects is justified given the small size of most of these repair and reconstruction jobs and the fact that they will be scattered over different parts of the country. Since they cannot be combined into packages larger than the ones devised, they will not be of interest to international firms. As for goods, the loan funds would be used to purchase primarily hardware and software to help the subexecuting agencies better perform their work. Various suppliers representing foreign firms in Peru sell such items, and they also can assure proper maintenance and service.

I. FRAME OF REFERENCE

A. Introduction

- 1.1 In the first half of 1998, Peru suffered meteorologic and oceanographic effects of the phenomenon known as "El Niño," resulting in torrential rains and flooding in the departments of Tumbes, Piura, Puno, Cusco, Pasco (in the province of Oxapampa), Arequipa, Huancavelica, Ancash, Lambayeque, La Libertad, Cajamarca, Tacna, Ayacucho, Moquegua, Apurimac, Ica and Distrito Ambar in the department of Lima. The government considered the emergency ended as of July 8, 1998. El Niño produced a profound impact on the country's economy and caused considerable damage, primarily on irrigation, transportation, sanitation, health, education and housing infrastructure.
- 1.2 In anticipation of the impact from El Niño and based on oceanic and atmospheric variables, as well as on prior occurrences of the phenomenon, in the second half of 1997 the government estimated the cost of damage at approximately US\$430 million. In order to partially finance this amount, the Bank granted a loan for US\$150 million in November 1997 (1058/OC-PE), the World Bank provided another loan (4250-PE) for a similar amount, and the government provided the remaining US\$130 million. This program covered the phases of prevention (June to December of 1997) and emergency (January to July of 1998), as well as the start of the reconstruction phase, which is in full execution.
- 1.3 The effects of El Niño, however, were much more severe than anticipated, and the physical damage to infrastructure was US\$1.244 billion (nearly three times the initial estimate); there was therefore no financing for a great number of reconstruction works. In these circumstances, the government appealed once again to nine international financial organizations to help narrow the financing gap, and received loans from Japan (Overseas Economic Cooperation Fund [OECF] and Eximbank) and the Andean Development Corporation (CAF). Likewise, resources from the World Bank were redirected to regions affected by the phenomenon. The government has also requested additional resources from the Bank in the amount of US\$120 million.
- 1.4 The additional financing from the Bank, proposed in this document, will cover physical infrastructure works directly affected by El Niño, identified between late 1998 and early 1999, that have been declared eligible according to the criteria agreed upon with the Bank in contract 1058/OC-PE. This loan is included in the country paper of April 1998 (GN-1992-1).

B. Main effects of El Niño

1. Effects on the economy

- 1.5 From the point of view of the economy, El Niño caused a temporary contraction of supply, since it directly affected the productive sectors and the store of physical capital. The most affected productive sectors were fishing, the manufacturing industry that processes primary resources, and agriculture. In the first half of 1998, the production of these sectors declined 64.9%, 27.3% and 1.7%, respectively. This constricting effect carried over to traditional fishing exports, which fell 42.8%, to nontraditional fishing (20.1%), to traditional agriculture (42.1%) and to nontraditional agriculture (33.6%). El Niño also directly affected, though to a lesser extent, transport of some mining products to exporting ports, the production of hydrocarbons and the value added in the trade sector. The indirect effects have shown themselves in the form of the ripple effect on aggregate demand (via the multiplier mechanism) of the highly constricting impact on earnings in the sectors directly affected.
- 1.6 It has been estimated that of the 2.9 percentage points in GDP lost in the first half of 1998,¹ at least two points (approximately US\$1.3 billion) can be attributed to the effects of El Niño. This is in addition to the reconstruction costs, amounting to US\$1.244 billion. This means that the total costs for the economy amount to approximately US\$2.544 billion.
- 1.7 The effects of El Niño, added to those of the international financial crisis during 1998 translated to an increase of 0.7% in GDP (compared to an average annual rate of 6.5% in the 1993-97 period) and a deficit in the current accounts balance of payments equivalent to 6% of GDP. Despite the fact that the sectors affected by El Niño recovered in 1999, infrastructure is still in the reconstruction process.

2. Effects on population and housing

- 1.8 As a result of the floods and landslides, more than 107,600 dwellings were affected, of which some 9,600 were totally destroyed, approximately 21,700 were left uninhabitable, roughly 32,000 were partially destroyed, and some 44,300 were affected to a lesser degree. The population harmed as a result of this consisted of 528,000 persons, primarily in the departments of Piura, Lambayeque, La Libertad, Tumbes, Ica and Ancash. The damage has been dealt with by the National Civil Defense Institute (INDECI) and by the National Food Support Program (PRONAA). For the reconstruction stage, the affected population has been receiving help from the government, through the Banco de Materiales.

¹ This percentage growth loss was calculated by comparing annualized first-half GDP growth (3.1%) with forecasts before El Niño and the Asian crisis (6%).

3. Effects on physical infrastructure

- 1.9 As mentioned earlier, the damage caused on physical infrastructure has been calculated at US\$1.244 billion, distributed, by sector, as follows: (i) US\$437 million in the transportation sector, in which approximately 6,395 km of the road system (8.6% of the total) were affected by collapses and floods, seven airports sustained physical damage and 146 bridges were left unusable; (ii) US\$337 million in the agriculture and irrigation sector, with damage in 204,190 hectares, of which nearly half remained unusable for planting and cultivation; (iii) US\$206 million in the education sector, for damage caused to 2,873 local schools; (iv) US\$60 million in the health sector, in which 540 clinics and health centers were seriously affected; (v) US\$65 million in the sanitation sector, affecting pipes and collectors in ten departments; (vi) US\$81 million in the energy sector, in which 30 hydroelectric plants and 23 transmission lines suffered a range of damage; and (vii) US\$58 million in other sectors.

C. Bank loan 1058/OC-PE

1. Basic information

- 1.10 The Bank loan for US\$150 million was approved on November 19, 1997 and was declared eligible for disbursements one month later. Its objective was to serve the needs of the prevention, emergency and reconstruction phases.

2. Disbursements and commitments

- 1.11 As can be seen in the following table, 62% of the loan has been disbursed and the remaining 38% has been committed, with its total disbursement having been estimated for the first half of the year 2000.

Table I-1
Loan 1058/OC-PE: Amounts disbursed and committed
(Amounts in US\$ millions)

CATEGORIES	Approved		Disbursed		Committed	
	IDB	Local	IDB	Local	IDB	Local
1. Administrative costs	1.50	1.20	0.55	0.34	0.95	0.86
Coordinating Unit	1.20	1.20	0.55	0.34	0.65	0.86
External audits	0.30				0.30	0.00
2. Program components	147.00	42.60	92.40	34.52	54.60	8.08
Prevention	30.00	13.00	22.68	4.01	7.32	8.99
Mitigation and reconstruction	117.00	29.60	69.72	30.51	47.28	-0.91
3. Financing costs	1.50	21.20	0.61	4.01	0.89	17.19
Interest during execution		20.00		3.63		16.37
Credit fee		1.20		0.38		0.82
Inspection and supervision	1.50		0.61		0.89	
TOTAL	150.00	65.00	93.56	38.87	56.44	26.13

3. Executing agencies

- 1.12 The executing agency for loan 1058/OC-PE is the Ministry of Economy and Finance (MEF), through the Office of Investment (ODI), which includes the program coordinating unit (PCU). The approval of funds to the subexecuting agencies is granted by an approval commission called the El Niño Special Commission, chaired by the Minister of Transportation, Communications, Housing and Construction (MTC) and made up, in addition, of the Deputy Minister of Finance, the head of the Office of Public Investment (ODI), a representative of the Office of the Prime Minister, and a Technical Secretary. The resources approved by this commission are transferred by the MEF to the subexecuting agencies, through an agreement in which, among other things, the objectives, costs and financing, disbursement method and obligations of the parties, procedures for execution, monitoring and evaluation, accounting, etc., are specified.
- 1.13 The subexecuting institutions responsible for the program's works are: (i) in the transportation sector, the National Highway Maintenance System (SINMAC) and the special transportation infrastructure rehabilitation project (PERT); (ii) in the sanitation sector, the national water supply and sewerage Program (PRONAP); (iii) in the education and health sectors, the National Education and Health Infrastructure Institute (INFES); and (iv) in the agriculture sector, the Ministry of Agriculture (MINAG), the National Agricultural Health Service (SENASA) and the National Development Institute (INADE).

4. Works financed

- 1.14 With the Bank's loan, works in the following sectors have been financed: (i) in sanitation, the repair of water mains, clean-up of catchment canals, rehabilitation of

water and sewerage systems, repair of equipment, reconstruction of infrastructure, studies, and supervision; (ii) in transportation, urgent works to make roads serviceable, as well as studies, reconstruction of sections of highway and bridges in the main road system, and supervision of works; (iii) in agriculture, the clean-up, reconstruction and reinforcement of irrigation canals, protection and channeling of rivers and riverbank reinforcement, roads for access and sewers, rehabilitation of irrigation infrastructure, and procurement of heavy equipment; and (iv) in education and health, protection of health colleges and clinics, rehabilitation and reconstruction of health centers and classrooms, studies, and supervision of works.

5. Environmental monitoring

- 1.15 Activities for prevention and for rapid response to emergencies were exempt from environmental impact assessment (EIA), but the Bank required that an ex post environmental audit be carried out for the prevention phase (June to December of 1997), which was carried out by a technical consulting firm. This showed that the interventions that were conducted had not produced specific and significant negative impacts on the physical, biotic and sociocultural environment. For the stages of emergency and reconstruction, each project includes, according to the scale of the work, an environmental assessment study or preparation of an environmental assessment brief. It is also anticipated that an ex post evaluation of the emergency component will be made.

6. Lessons learned that are applicable to the present program ²

- 1.16 The execution of program 1058/OC-PE has been performed well, in terms of the meeting of objectives, level of budgetary and physical execution, and level of cooperation between the PCU and the subexecuting agencies. The most important lessons derived from the execution of the program are: (i) the subexecuting agencies should be agencies with administrative autonomy, to ensure expeditious implementation; (ii) in the reconstruction stage, supervision and studies should be contracted out, avoiding the fragmenting of bid packages; (iii) INFES should be supported so that it can take on expeditiously and effectively the additional responsibility of reconstructing schools and health facilities; and (iv) in the reconstruction stage, the environmental monitoring capacity of the PCU and of the subexecuting agencies should be supplemented, given the large number and range in the execution of works over very short periods of time.
- 1.17 The items indicated above, with the exception of item (iii), have already been incorporated in the current program's execution mechanisms and will continue with the proposed financing. Item (iii) will be put into full effect with the new loan.

² Lessons that could be applied to future El Niño events are outlined in Annex IV.

D. Assistance from other international agencies

- 1.18 The **World Bank** provided loan 4250-PE, in 1997, for US\$150 million. This loan has been completely allocated for financing works in the following sectors: (i) in transportation, urgent works to make roads serviceable on sections of the secondary road system, reconstruction of bridges and highways on sections of the secondary road system; and (ii) in agriculture, hydraulic infrastructure works and studies of the major irrigation and drainage systems. In addition, for the purpose of improving forecasting of El Niño, the World Bank is supporting the strengthening of institutions responsible for that task – the Maritime Institute of Peru (IMARPE), the National Meteorologic and Hydrologic Service (SENAMHI), the Geophysics Institute of Peru (IGP) and the Directorate of Hydrology and Navigation (DHN). A hydrologic and meteorologic study of the 53 watersheds of the Pacific slope in Peru has also been conducted.³
- 1.19 The World Bank has also redirected US\$37.6 million from the irrigation subsector program (IBRD loan 4076-PE) to finance small irrigation works in regions damaged by El Niño.
- 1.20 The **Government of Japan** granted a loan, through the Overseas Economic Cooperation Fund (OECF), for the approximate equivalent of US\$115 million for the transportation sector, including primary and secondary roads. In addition, the Eximbank of Japan approved a loan for US\$50 million for the procurement of heavy machinery.
- 1.21 The **Andean Development Corporation** (CAF) has approved a loan for US\$17 million for the reconstruction of works affected by El Niño, from the CHAVIMOCHIC Special Project. The CAF is also financing technical cooperation for strengthening the institutions responsible for forecasting El Niño events.

E. The Bank's strategy

- 1.22 In accordance with policy guidelines for natural and unexpected disasters (OP-704) approved by the Board of Executive Directors on November 11, 1998, the Bank's assistance may address the stages of disaster prevention and/or mitigation, emergency, and rehabilitation or reconstruction.
- 1.23 In the framework of the above-mentioned policy, the Bank supported the country in financing the first two stages and is currently supporting it in the reconstruction stage by way of loan 1058/OC-PE. However, the current costs of this stage are significantly exceeding the amounts originally estimated; thus, the proposed financing will serve to cover the reconstruction processes already begun.

³ These agencies are also being strengthened through technical-cooperation funding from the Bank-administered Japan Fund and the Andean Development Corporation.

F. Rationale of the proposed financing

- 1.24 The following table shows the amount required for reconstruction of works affected by El Niño, as well as the sources of the corresponding financing. According to the table, the proposed financing will contribute significantly to narrowing the resource gap in the phase of reconstruction of works directly affected by El Niño.

Table I-2
Financing needs of post-El Niño reconstruction works (in US\$ millions)

Sector	Total cost	AVAILABLE FINANCING						Financing gap	PROPOSAL FOR CLOSING THE GAP		
		IDB 1058/OC	World Bank (Loans. 4250 and 4076)	Japan	CAF	Treasury	Total available		IDB PE-0198	National Treasury and other	Total
Education	206.00	9.75				14.82	24.57	181.43	23.14	158.29	181.43
Health	60.00	1.97				16.44	18.41	41.59	7.29	34.30	41.59
Sanitation	65.00	21.15				20.28	41.43	23.57	19.84	3.73	23.57
Transportation	437.00	60.33	76.60	115.00		56.18	308.11	128.89	56.36	72.53	128.89
Agriculture and irrigation	337.00	31.09	32.20	50.00	17.00	164.71	295.00	42.00		42.00	42.00
Other ¹	139.00		5.60			84.00	89.60	49.40		49.40	49.40
TOTAL	1244.00	124.29²	114.40	165.00	17.00	356.43	777.12	466.88	106.63³	360.25	466.88

¹ Includes damage to the fishing, legal, energy and mining, defense and social sectors served by Public Treasury resources.

² The difference between this amount and the US\$150 million approved is the amount used in the prevention and emergency stages.

³ The difference between this amount and the US\$120 million proposed is the program's financing and administration costs.

Source: Evaluation of Housing, Population and Basic State Infrastructure affected by El Niño.

Executive summary, National Institute of Statistics and Information Systems (INEI), July 1998

Preparation: Office of Public Investment – MEF

Date: October 22, 1999

II. THE PROGRAM

A. Objectives

- 2.1 The general objective of the program is to normalize the economic and social development of the departments affected by El Niño. The specific objective is to carry out the reconstruction of physical infrastructure works and resumption of service damaged by El Niño in the sectors of transportation, sanitation, education and health in the departments that were formally declared by the government to be in a state of emergency.

B. Description

- 2.2 In order to meet the above objective, the program includes three components: (i) transportation sector; (ii) sanitation sector; and (iii) education and health sectors. Given the large number of works which are for the most part small in scale, they have been distributed among five sectoral subexecuting agencies and have been grouped into a total of 29 bid packages.
- 2.3 Annex I presents a summary of the works. Details of these can be found in the Bank's technical files.

1. Component 1: Transportation sector (US\$56.3 million)

- 2.4 This component includes four subcomponents: (i) reconstruction of three sections of main highways; (ii) rehabilitation of rural road infrastructure; (iii) reconstruction of urban infrastructure; and (iv) riverbank reinforcement to support road infrastructure. The MTC is responsible for execution. The total cost of the above is US\$77.6 million, of which the Bank will finance US\$56.3 million, with the government financing the remaining US\$21.3 million.

a. Reconstruction of three sections of main highways

- 2.5 This includes the reconstruction of the three following sections: (i) the Lambayeque-Bayovar Bypass-Piura highway, whose total cost is estimated at US\$20.2 million; (ii) the Sullana-Talara-Los Organos highway, with a total cost of US\$16.5 million; and (iii) the Los Organos-Aguas Verdes highway, with a total cost of US\$10 million. This subcomponent includes the cost for management and supervision of the works, for an equivalent of US\$3 million. The total cost of these tasks is US\$49.7 million, of which the Bank will finance US\$37 million, with the government contributing the remaining US\$12.7 million. For purposes of execution, and because of the size of the works, each work constitutes a bid package.

- 2.6 The design and engineering studies have been contracted with loan 1058/OC-PE, and it is estimated that these will be concluded in the first quarter of 2000. The executing agency for this subcomponent will be the Special Transportation Infrastructure Rehabilitation Program (PERT), under the control of the MTC, which will apply the same technical criteria in its execution as are applicable to the programs for which it is responsible, particularly those financed by the Bank.

b. Rehabilitation of rural road infrastructure

- 2.7 This subcomponent includes the reconstruction of 75 small works grouped in four bid packages in the departments of Ancash, Apurímac, Arequipa, Ayacucho, Cajamarca, Cusco, Huancavelica, La Libertad, Lambayeque, Moquegua, Piura, Puno, Tacna and Tumbes. The total cost of these works is US\$12.2 million, of which the Bank will finance US\$8.6 million, with US\$3.6 million in local counterpart funds.
- 2.8 The corresponding studies are being financed under program 1058/OC-PE, and it is expected that they will be concluded in the first quarter of 2000. The executing agency will be the Rural Roads Program (PCR), under the MTC, which will use the same criteria and procedures applicable to programs for which it is responsible, particularly those with Bank financing.

c. Reconstruction of urban infrastructure

- 2.9 This includes the reconstruction of 19 works, consisting primarily of roadways and sidewalks in the departments of Ica, La Libertad, Tumbes and Piura. These works have been grouped into four bid packages. The total cost of these works is US\$11 million, of which the Bank will finance US\$7.9 million, with the government financing US\$3.1 million. The executing agency for this subcomponent will be the Local Roads and Environmental Protection Project (PCL), under the MTC.

d. Riverbank reinforcement to support road infrastructure

- 2.10 This involves the reconstruction of 37 structures (rock, concrete or earth walls) to protect road infrastructure and certain critical areas in localities that sustained damage from cave-ins caused by heavy discharges that occurred as a result of El Niño. These works have been grouped into four bid packages. Their total cost is US\$4.8 million, of which the Bank will finance US\$2.9 million, with the government financing US\$1.9 million.
- 2.11 The technical reports corresponding to the works referred to are being financed within program 1058/OC-PE and will be concluded in the first quarter of 2000. The executing agency for this component will be the PCR.

2. Component 2: Sanitation sector (US\$19.9 million)

- 2.12 This includes 395 small works, consisting primarily of repair and/or reconstruction of collectors and pumping mains, rehabilitation of wells and pumping stations, and replacement of water and reservoir networks in different departments. These works have been grouped into four bid packages. The total cost is US\$29 million, of which the Bank will finance US\$19.9 million, with US\$9.1 in local counterpart funds.
- 2.13 The technical reports on the works are being financed with resources from program 1058/OC-PE: 80% of these will be finished in November 1999 and the remaining 20% in the first half of 2000. The subexecuting agency will be the National Water Supply and Sewerage Program (PRONAP) or other sanitation utilities approved in advance by the Bank.

3. Component 3: Education and health sectors (US\$30.4 million)

- 2.14 This component is targeted to repairing and/or reconstructing health facilities and educational centers. The total cost is US\$49.1 million, of which the Bank will finance US\$30.4 million, with the government financing US\$18.7 million.
- 2.15 Given the size and nature of the education and health-care infrastructure involved, the technical reports will contain an economic/social rationale, which was coordinated with the Bank. These reports are being financed with resources from program 1058/OC-PE, in accordance with the timetable prepared by the National Education and Health Infrastructure Institute (INFES) in coordination with the PCU. The executing agency for these works will be INFES.

a. Health subcomponent

- 2.16 This includes the repair and/or reconstruction of 94 health-care facilities (clinics and centers) in the departments of Ancash, Piura, La Libertad and Lambayeque. These works have been grouped into two bid packages. The total cost of the subcomponent is US\$11.5 million, of which the Bank will finance US\$7.3 million, with the government financing US\$4.2 million. The local counterpart also includes health equipment and supervision and management.

b. Education subcomponent

- 2.17 This includes works for the repair and reconstruction of 254 educational centers in 11 departments. These works have been grouped into eight bid packages. The total subcomponent cost is US\$37.6 million, of which the Bank will finance US\$23.1 million and the government US\$14.5 million, including school furnishings, supervision and management.

4. Criteria for selection of works

- 2.18 The criteria followed in selecting works to be included in the program were: (i) location within the emergency region designated by the government; (ii) proof that the damage was the direct result of El Niño; (iii) inclusion within the sectors agreed upon in the contract for loan 1058/OC-PE; (iv) the in-progress preparation of a technical report, an environmental brief or evaluation, and a cost-benefit analysis, a breakdown of the expenditures and the supporting documentation; and (v) prior incorporation in a list of specific projects presented to the Bank for the purposes of the proposed program during the October 1999 analysis mission.
- 2.19 "Reconstruction" is understood to be the improved restoration of the work with a scale similar to its original scale.

5. Social equity and poverty reduction

- 2.20 The departments that sustained damage from El Niño, in which the program's works will be executed, have a combined poverty index of 2.4, which is higher than the national index of 2.0;⁴ thus, the project qualifies as a social equity enhancing and poverty-reduction project, as described in the key objectives for Bank activities mandated in the Eighth Replenishment (document AB-1704). On this basis, a financing matrix of 70% and a repayment period of 25 years are being proposed.

C. Program costs

- 2.21 The total estimated cost of the program is US\$171 million, of which the Bank will finance US\$120 million, with the government financing US\$51 million. The loan will come from the Bank's Ordinary Capital, through the Single Currency Facility.
- 2.22 The financing conditions will be: variable interest; credit fee of 0.75% on nondisbursed loan balances; inspection and supervision fee of 1% of financing. Repayment term will be 25 years.
- 2.23 No difficulties are anticipated for the contribution of local counterpart funds of US\$51 million, given the priority assigned to the program by the government. In this connection, the government has contracted a loan from the Andean Development Corporation (CAF) for US\$100 million to provide counterpart funds for priority projects, including the one being proposed.

⁴ In calculating the average poverty index for the entire country and for the departments the program will be benefiting, the population of each department was used as a weighting factor. FONCODES calculations were used for departmental averages, with the following classification: 3.01 to 4.22 - Extremely poor. 2.01 to 3.00 - Poor. 1.51 to 2.00 - Moderately poor. 1.00 to 1.50 - Acceptable. See FONCODES: Social Investment Map, *FONCODES Frente a la Pobreza, 1991-94*. Lima, June 1995.

- 2.24 With resources from the loan, the following will be financed: (i) part of the specific works included in the list presented to the Bank and summarized in Annex I; (ii) part of the costs of administration of the program; and (iii) financing costs, including interest during the execution period.
- 2.25 The administrative costs include the functioning of the PCU over the course of four years (fees, travel costs and per diem for inspecting work in progress), as well as the costs of audits and the special report.

Table II-1
Table of costs
(US\$ millions)

Cost item	IDB	Local	Total
1. Administrative costs of the program	2.3	0.7	3.0
1.1 Coordinating Unit and advisory services	2.0	0.6	2.6
1.2 Audits (financial, operational, environmental) and special report	0.3	0.1	0.4
2. Program components	106.6	49.1	155.7
2.1 Transportation	56.3	21.3	77.6
2.2 Sanitation	19.9	9.1	29.0
2.3 Health and education	30.4	18.7	49.1
3. Financing costs	11.1	1.2	12.3
3.1 Interest during execution	9.9	-	9.9
3.2 Credit fee	-	1.2	1.2
3.3 Inspection and supervision	1.2	-	1.2
TOTAL	120.0	51.0	171.0
PERCENTAGE	70%	30%	100%

III. EXECUTION

A. Borrower and executing agency

- 3.1 The borrower will be the Republic of Peru. The executing agency for the program will be the Ministry of Economy and Finance (MEF), by way of the Office of Public Investment (ODI) out of which the program coordinating unit (PCU) is operating. The subexecuting agencies for works and for studies will be the Ministry of Transportation (PERT, PCR and PCL) for works in the road sector, the PRONAP for the sanitation sector, and the INFES for the education and health sectors.

B. Execution arrangements

1. Program coordinating unit

- 3.2 The PCU has been in operation since the end of 1997 and is made up of a coordinator and a team composed of: (i) specialists in the sectors of agriculture, transportation, sanitation, health and education; (ii) evaluators in the areas of environment and institutional monitoring; and (iii) experts on systems, accounting, administration and procurement.
- 3.3 The PCU is in charge of the following tasks: (i) receiving and reviewing the requests for financing presented by the subexecuting agencies, ensuring that they meet the general and specific eligibility criteria of the activities; (ii) recommend the corresponding financing for the approval of the Special El Niño Commission; (iii) request the disbursement of resources from the Bank's loan contract and collaborate with the subexecuting agencies to obtain local counterpart funds, in order to ensure the complete financing of the program; (iv) ensure the application of environmental criteria during the execution of works; (v) centralize technical and accounting information for the program and carry out its accounting; (vi) prepare reports for the Bank on the progress of the program and any other technical, legal, economic, institutional or financial information requested of it; (vii) ensure that obligations related to the execution of the program are fulfilled; and (viii) maintain close coordination with the subexecuting agencies.

2. Special El Niño Commission

- 3.4 This Commission is chaired by the Minister of Transportation and also includes the Deputy Minister of Finance, the head of the Office of Public Investment of the MEF, a representative of the Office of the Prime Minister, and a Technical Secretary. The Commission approves requests, allocating to the proposals a percentage of funding similar to that which the Bank grants, i.e., 70% from external financing and 30% from the National Treasury.

3. Subexecuting agencies

- 3.5 The program's subexecuting agencies will execute, monitor, and maintain the reconstruction works using the same technical, environmental, design and evaluation criteria they follow in programs they currently have under way. The subexecuting agencies are as follows:
- a. The Transportation Rehabilitation Program's Special Transportation Rehabilitation and Infrastructure Project – PERT-PRT – is an organ of the Ministry of Transportation, Communications, Housing and Construction (MTC), with technical and administrative autonomy. Its purpose is to restore the country's transportation infrastructure, with financing from the central government and from external loans granted by various international organizations, among them the IDB and the IBRD.
 - b. The Rural Roads Program (PCR), falling under the MTC, is in charge of rehabilitating rural roads and fostering development of construction microenterprises and small enterprises in the rural roads maintenance programs at the local community level.
 - c. The Local Roads and Environmental Protection Project (PCL) comes under the Directorate of Highways, which in turn reports to the General Directorate of Roads. Its objective is to pave urban roads (urban settlement roads that are unpaved) in the depressed periurban areas of Lima and of the main cities in the country's interior. The PCL carries out technical supervision of work done on force account funded from the National Treasury. The PCL began work in 1997.
 - d. The National Water Supply and Sewerage Program (PRONAP) is a special project under the Ministry of the Presidency, with technical and administrative autonomy. It has, among others, the function of carrying out basic sanitation works and studies entrusted to it by the government, in selected coastal, mountain and forest regions of the country, in coordination with the respective water and sanitation utilities.
 - e. The National Education and Health Infrastructure Institute (INFES) is a decentralized domestic public-law, public-sector agency of the Ministry of the Presidency, with administrative and technical autonomy. Its objective is to meet the requirements for infrastructure and equipment in education and health, according to the guidelines and priorities established by the Ministry of the Presidency, in coordination with the education and health sectors.

4. Agreements with the subexecuting agencies

- 3.6 Once the requests have been approved, the resources are transferred to the subexecuting agencies in the framework of the agreement between them and the ODI. These agreements are in force for one-year periods.

- 3.7 The agreements for transferring resources between the PCU and the subexecuting agencies cover the responsibilities of both parties. They also determine the disbursements to be transferred by the PCU, in accordance with the monthly plan that has been developed, under the following conditions: (i) presentation of periodic financial and execution reports; (ii) presentation of eligible expenditures made; (iii) compliance with the agreed upon timetable for bids and procurement; (iv) opening of separate accounts for the project; and (v) allocation of required counterpart funds. These agreements have been used successfully in program 1058/OC-PE and will continue to be used with the present program. In view of the fact that the program envisages two subexecuting agencies with which there are no current contracts, the existence of agreements with all subexecuting agencies that would implement activities in 2000 is being included as a condition precedent to the first disbursement.

C. Financial execution mechanism

- 3.8 Program resources targeted to financing eligible studies and works will be deposited in a special account, with accounting that is separate from the executing agency's other accounts. The subexecuting agencies will also maintain separate accounts for the funds transferred by the PCU.

D. Revolving fund

- 3.9 Loan proceeds will be made available through the revolving fund mechanism for the equivalent of 5% of the total financing amount (US\$6 million), according to standard Bank procedures.

E. Period of commitment and of disbursement

- 3.10 The period for commitment of the loan proceeds will be a maximum of three years from the entry into force of the loan contract, and the disbursement period will be three-and-a-half years. These periods will not be extendable.
- 3.11 The estimated timetable of disbursements is as follows:

Table III-1
Timetable of disbursements
(In US\$ millions, and percentages)

	Year 1		Year 2		Year 3		Year 4	
	Amount	%	Amount	%	Amount	%	Amount	%
Bank	42	35	54	45	18	15	6	5
Local	18	35	22	45	9	15	2	5
Total	60	35	76	45	27	15	8	5

F. Procurement of goods and contracting of works and services

- 3.12 Procurement of related goods and services, construction of civil works, as well as contracting of consulting services financed with program resources will be carried out in accordance with normal Bank procedures for procurement and for selection and contracting of consultants. The timetable for bidding is presented in Annex II.
- 3.13 Thresholds above which international competitive bidding will be mandatory will be US\$5 million for civil works and US\$350,000 for goods and services. These are the same thresholds approved for procurement under loan 1058/OC-PE.
- 3.14 The threshold for works projects is justified given the small size of most of these repair and reconstruction jobs and the fact that they will be scattered over different parts of the country. Since they cannot be combined into packages larger than the ones devised, they will not be of interest to international firms. As for goods, the loan funds would be used to purchase primarily hardware and software to help the subexecuting agencies better perform their work. Various suppliers representing foreign firms in Peru sell such items, and they also can assure proper maintenance and service.

G. Operation and maintenance

- 3.15 Each subexecuting agency or ministry responsible for the works and equipment financed with Bank resources will make a commitment to operate and maintain these works and equipment, in accordance with generally accepted technical standards. For this purpose, the borrower will present, in the first quarter of each calendar year, beginning with the 12 months of the first disbursement and up through the three years following the last disbursement, an annual report on the maintenance status of the works and equipment, based on the results of supervision carried out on a representative sample of the projects financed with program resources.
- 3.16 During program execution and up through the three years following the last loan disbursement, the borrower will allow the Bank to visit and inspect the financed projects, and in the event that it is determined that the levels of maintenance are not acceptable, the relevant entity will be obligated to take the necessary measures to correct the situation.
- 3.17 Sanitation works will be executed by the PRONAP in coordination with the sanitation utilities or directly by some of these companies selected case by case, after Bank approval. In either case final responsibility for maintenance will rest with the companies. The PCU will undertake to present to the Bank, within three months of the first disbursement, the works maintenance plans of enterprises providing water services in the following cities: Tumbes, Piura, Chiclayo, and

Trujillo (condition precedent to the first disbursement). These plans will be the responsibility of the sanitation service providers.

- 3.18 Maintenance of the main highway system will be carried out by the national highway maintenance system (SINMAC), which is the institution responsible by law for carrying out preventive maintenance and repair of that system and has a budget for same.
- 3.19 Rural highways repaired and riverbank reinforcement works will be maintained in the context of the road maintenance management program that has been instituted within the program that is receiving Bank financing.
- 3.20 The educational and health centers constructed by the INFES will be transferred, as is normally done, to the Ministries of Education and Health, respectively, which will be responsible for the maintenance of school buildings, in the case of education. Ministry of Health guidelines for maintenance of medical clinics and health centers will be followed. Resources for maintenance will come from the budget allocated to the corresponding ministries, as well as from certain fees which they charge to users of the services, in the case of health care. Since the planned work involves repairs to and rehabilitation of existing centers, each has a budget for operation and maintenance.

H. Inspection and supervision

- 3.21 The Bank will determine the inspection procedures that it deems necessary for the satisfactory execution of the program, including technical supervision of works financed by the program. The PCU, in turn, will continue to have its own supervision plan.

I. Program monitoring

1. Semiannual reports

- 3.22 The PCU will present to the Bank detailed semiannual reports on the financed works. On the basis of these reports, the project team will conduct semiannual missions to evaluate the progress of the program and introduce any necessary adjustments.

2. Final report

- 3.23 The PCU will submit to the Bank a final report in which the information on execution, covering the entire execution period, will be consolidated.

3. Special report

- 3.24 **Systematizing of the experience and application to similar situations.** In order to improve the government's ability to respond to similar disasters in the future and take advantage of the experience gained in implementing activities to deal with the 1998 El Niño, the PCU will prepare:
- a. Indicators that measure the impact of preventive and emergency actions on existing infrastructure. In preparing these indicators, account will be taken of actions actually carried out in the prevention and emergency phases of dealing with the 1998 El Niño.
 - b. A system based on the above indicators that includes: (i) means of rapidly mobilizing local and external financial resources; (ii) criteria for channeling these resources to the executing agencies; (iii) mechanisms for involving the population in preparing for emergencies; (iv) types of signals or indicators originating from technical forecasting agencies; and (v) actions triggered by these indicators (emergency prevention, disaster preparedness). With program resources, technical assistance necessary to develop the required system can be contracted.
- 3.25 The government will also define the regulations and the office or institution responsible for beginning the implementation of the system, as well as the network of institutions needed for complete implementation of the system to deal with a potential emergency similar to El Niño, in addition to resources to maintain the system. The designed system will be transferred to this network of institutions.
- 3.26 In order to ensure the timely execution of the required system, the PCU will commit to: (i) defining the indicators to be used, within six months of the first disbursement; (ii) preparing the indicators, by the end of the year 2000; (iii) completing the system, by the end of 2001; and (iv) transferring it to the corresponding offices designated by the government by July of 2002.
- 3.27 Annex IV summarizes some of the most important lessons learned, to date, from the implementation of measures taken by the government to deal with the 1998 El Niño event, particularly during the phases of prevention and emergency. These lessons will be taken into account in devising the system mandated in the special report.
- 3.28 It should be pointed out that the technical forecasting agencies are being strengthened through technical cooperation from the World Bank, the CAF, and the Bank with resources from the Japan Fund, in order to improve their response capability.

4. Financial and operational audits

- 3.29 The PCU will contract an independent auditing firm, acceptable to the Bank, to be responsible for annual audits of the project's financial statements and for operational audits.
- 3.30 The PCU will present to the Bank consolidated audited statements of revenue and expenditures, and audited statements of program investments. The audit reports will be presented to the Bank within 180 days following the close of each fiscal year, beginning with the year in which the first disbursement is made and up to the close of the program.
- 3.31 The basis for the preparation of the information, which will be audited and presented to the Bank, will be the consolidated information that the PCU maintains on the use of the financing and of counterpart funds, including that which the subexecuting agencies present in their requests for disbursements through the PCU.
- 3.32 The external auditors will have access to the accounting records and supporting documentation which both the PCU and the subexecuting agencies will maintain, in accordance with Bank requirements. Selectively, and in accordance with their procedures, the external auditors will physically examine some of the works executed and partially or totally financed with resources from the funding.
- 3.33 As a result of the operational audits, the external auditors will present annual reports that include aspects such as: (i) the use of procedures for contracting consulting services and procurement of goods and services, consistent with the applicable rules for each case; (ii) the conducting of physical examinations, by sampling, of works executed and partially or totally financed with resources from the funding; (iii) evaluation of compliance with other contractual commitments; and (iv) evaluation of other operational aspects considered important to review. The operational audit reports will be presented at the same time that the audited financial statements are presented.
- 3.34 The estimated cost of the audits has been included in the table of program costs, to be financed with resources from the loan.
- 3.35 The external audit firm is to be hired within 30 days after the end of the fiscal year. If possible the same firm should be retained throughout the life of the program.

5. Environmental monitoring

- 3.36 The environmental monitoring of the program will remain similar to that established in the contract for loan 1058/OC-PE, in regard to the reconstruction stage. In other words, each project will include, according to its size, an environmental study or preparation of an environmental assessment brief. In addition, in order to strengthen the PCU's environmental monitoring capacity and

ensure that criteria compatible with the scale of the works are applied, environmental technical advisory services will be engaged to: (i) design an environmental monitoring system for the PCU and subexecuting agencies; (ii) draw up terms of reference for environmental audits of the emergency-stage works; (iii) review the studies and technical reports, in order to verify the use of the environmental criteria; and (iv) evaluate the use of the Manual of Citizen Participation prepared by the National Environmental Council and distributed by the PCU to subexecuting agencies. The aforementioned advisory services will be a condition precedent to the first disbursement.

- 3.37 The PCU will ensure, however, that in the case of reconstruction of small and technically simple works, particularly in education and health-care facilities, the environmental monitoring will be proportional to the scale of the works and in line with their noncomplex nature.

6. Ex post evaluation

- 3.38 The project team conferred with the government regarding the need to have an ex post evaluation of the program. The government indicated that such an evaluation is not considered necessary, particularly in light of the special evaluation that allows it to systematize the experience gained and transferred to government offices.

7. Review and monitoring by the Bank

- 3.39 In addition to its regular supervision, the Bank will verify that all works projects for which financing is requested are on the list negotiated with the government. It will perform a more thorough review of a sample of projects on the basis of technical parameters and unit costs, following a least-cost criterion.

IV. FEASIBILITY, SUSTAINABILITY, BENEFITS AND RISKS

A. Feasibility of the program

1. Component 1: Transportation sector

a. Technical feasibility

- 4.1 **Sections of the main road system.** These works include the reconstruction of three sections: 202 km, 166 km and 100 km. These roads connect the city of Chiclayo, north of Lima, with the neighboring country of Ecuador, and involve a major paved highway connecting important cities in terms of population served and economic value of agricultural, fishing, mining, and other production. The works to be executed include the reconstruction of sections that have been damaged by El Niño and include the repair and replacement of roadway (7 m in width) and shoulders (1.2 m wide), as well as the reconstruction of highway crossing structures that traverse watercourses, such as sewers and culverts. These works are technically feasible, in that they involve the repair of a highway with high traffic volume, on flat terrain and close to important cities with available personnel, equipment, and communications and other services. Construction materials are available in a number of ravines that cross the highway. The work follows its current routing; there are no problems with land requirements or clear title.
- 4.2 **Rural roads.** These works consist of the repair of small sections of tertiary highways, generally with layers of non-asphalt pavement, and small bridges damaged by El Niño. These works are technically feasible, since they involve the repair of sections of existing roads and since manpower, equipment, machinery, etc. are available in the area. Material from quarries can also be found in the areas close to the highways. There are no problems of accessibility, nor is the reconstruction complex. These are highways with roadways 3 m wide and shoulders of 0.5 m, and the tasks to be carried out include the clean-up and hauling of material deposited on the roadway, filling and forming of small embankments and repair of some sewers and small bridges.
- 4.3 **Roadways and sidewalks.** These works consist of the repair of sections of highways located in cities, as well as of shoulders destroyed as a result of the El Niño phenomenon. This involves replacement of asphalt on streets (including 6 m of roadway and 1 m of shoulder) and the repair of sidewalks (pedestrian paths) located on both sides of the roadways. This is considered feasible, since it consists of the repair of existing infrastructure, with its execution being simple, due to the fact that these are easily constructed works located within the cities, where manpower, equipment, machinery and services are available.

- 4.4 **Riverbank reinforcement.** These works involve the repair of sections of walls that have been damaged by El Niño. These walls consist of small dikes made of earth, rock or concrete, and involve works that can be easily constructed. Manpower and materials are available in the area; machinery must be brought from cities that are approximately 100 km away. The period during which the discharge from the rivers is low (April to November) makes for greater ease of construction.

b. Economic feasibility

- 4.5 **Main road system.** The studies that have been conducted indicate that these types of works are economically feasible. For the Lambayeque-Bayóvar Bypass-Piura, Sullana-Talara-Los Organos, and Los Organos-Aguas Verdes highways, an investment of US\$100,000 per kilometer has been considered, a figure that will be readjusted in according to the engineering studies now being carried out. This cost has been established using as a reference point the study conducted for rehabilitation of the section of the Trujillo-Reque highway (190 km), with a cost of US\$135,000 per kilometer, commissioned by the Ministry of Transportation. In the case of the project's highways, a lesser cost has been considered, due to the fact that, in the phase of urgent rehabilitation works (to make roads serviceable), some sections of the highways and drainage works, such as sewers and culverts, which would be of a permanent nature, have been reconstructed. The projected savings in transportation are significant compared to the current situation, due to the greater amount of time the vehicles are in use, which translates to greater use of fuel, loss of hours in transit, greater cost in repair and maintenance of vehicles, etc. The anticipated benefits would also be increased. The economic study conducted for the Trujillo-Piura section reports a net present value of US\$226.6 million, internal rate of return of 34.8%, and cost-benefit ratio of 3.9.
- 4.6 **Rural roads.** These works are economically feasible, since small investments will make possible the connection with small towns and production centers, reducing considerably the time vehicles are used to go between production and supply centers, as well as reducing the cost of freight. This affects the cost of products, benefiting the population served – generally people living in extreme poverty.
- 4.7 **Roadways and sidewalks.** These works are considered highly feasible economically, as they facilitate vehicular and pedestrian traffic, which currently involves significant costs for the population to access service centers and their homes on foot or by vehicle. In terms of the social aspect, it involves improving health conditions, as well as reducing pedestrian and vehicular accidents.
- 4.8 **Riverbank reinforcement.** These works are considered to be highly profitable; they are part of existing walls and the damaged section endangers the highways and bridges, resulting in the interruption of communication between centers of production and markets, as well as between cities. In some cases, population

centers, their inhabitants and dwellings and health and education service centers are also in potential danger.

c. Environmental feasibility

- 4.9 **Main road system.** Work on the Lambayeque-Bayovar Bypass-Piura, Sullana-Talara-Los Organos, and Los Organos-Aguas Verdes highway sections should have no significant environmental effects, since the impact on the surroundings was mostly produced when these roadways were originally constructed. Further, it will generate very positive effects, since by improving serviceability, it will improve services and economic activities as a whole and help raise the standard of living of the north coast. The environmental studies to be produced for each section should lead to improved exploitation of quarries, environmental precautions in the transport of materials, and better disposal of leftover materials at optimally devised dumpsites. Other important requirements will be to not pollute bodies of water with fuel and similar contaminants and carefully dispose of solid and liquid waste, ensuring that camps function properly and prohibiting hunting and the disturbance of third parties. These matters will be the responsibility of the contractors, overseen by the supervisors of each section of highway. In short, these projects should generate, from an environmental point of view, significant benefits and minimum adverse effects.
- 4.10 **Rural roads.** The rural roads rehabilitation projects, from the environmental point of view, involve great benefits, in that they increase vehicle flow, thus fostering trade and other transactions; at the same time, the physical, biological, socioeconomic and cultural effects should not be of concern if normal caution is taken in the construction process. The rehabilitation of these roads is of great benefit to rural areas with the greatest need for flow of products for consumption and also for transporting their goods quickly.
- 4.11 **Roadways and sidewalks.** The repair of roadways and sidewalks brings a series of environmental benefits in the form of reduced risk of accidents, more comfortable travel, and shorter travel times. Preventive measures to avoid accidents during construction are easy to follow, by installing signage and barriers to keep pedestrians and vehicles off the work site. Given the above, the environmental feasibility of the reconstruction of roadways and sidewalks is positive, with minimal negative effects.
- 4.12 **Riverbank reinforcement.** By protecting road infrastructure and populated centers, the reconstruction works are quite favorable for the local population and the surroundings, which contributes to stabilizing ravine embankments, preventing slides of rock, earth and mud. During the construction of the reinforcements, water resources will not be harmed, nor will third parties, and leftover materials will be properly disposed of. The reinforcements will lend greater security to roadways and inhabitants, provide manpower, and stabilize slopes.

2. Component 2: Sanitation sector

a. Technical feasibility

- 4.13 The sanitation projects, designed basically to rebuild and repair infrastructure damaged by El Niño, are technically feasible, having taken into account all the necessary facets of the construction process. Final designs, construction estimates, unit costs, completion timetables, polynomial formulae, lists of materials, and work plans are ready, as are associated surveys and soil mechanics and laboratory studies.

b. Economic feasibility

- 4.14 The economic appraisal was based on economic efficiency, analyzing projects from the standpoint of their impact on economic resources use. The appraisal showed their economic feasibility to be very high.
- 4.15 The Public Works Simulation Model (SIMOP) was used for the cost-benefit analysis of water supply projects, based on demand functions used in the PRONAP's 1996 "Feasibility Studies on Least-cost Expansion Plans for Water and Sewer Systems". When there was no demand function for a city slated to benefit from the project, one was estimated using the function from another locality judged to be similar as far as socioeconomic status, climate, and geographic location were concerned. The rates used were those of the average current tariff; also considered was the alternative cost for new users were they not to be hooked up to the system. In studies reviewed for this type of projects, residential consumers' willingness to pay was ascertained by way of the linear demand curve used in demand projections.
- 4.16 For sewerage projects specifically, economic benefits were measured using the contingent valuation approach. This value was estimated for different localities in the country in the above-mentioned feasibility studies.

c. Environmental feasibility

- 4.17 The reports provide for identifying significant environmental impacts and developing an environmental management plan. Impacts are identified by reference to a project's features and environmental considerations before construction work begins. These elements are covered in the model environmental brief delivered to the PRONAP.

3. Component 3: Education and health sectors

a. Technical feasibility

- 4.18 The projects, designed basically to rebuild and repair infrastructure damaged by El Niño, provide for all necessary elements in the construction process. They take into

account final designs, construction estimates, unit costs, completion timetables, polynomial formulae, lists of materials, and work plans, as well as associated surveys and soil mechanics and laboratory studies. A least-cost criterion will be applied to works included in the program, on the basis of INFES technical standards and unit costs. This will serve as a reference criterion for the Bank's monitoring and verifications mentioned in paragraph 3.39.

b. Economic feasibility

- 4.19 Because of the scale and nature of the education and health-care infrastructure, the technical reports contain an economic-social justification. These briefs address indicators of beneficiary headcount, education level, enrollments, population, targets, and rationale for reconstruction of each school and health-care establishment. Most of these justification briefs are ready, for each school and health-care establishment.

c. Environmental assessment

- 4.20 The reports provide for identification of the most significant environmental impacts and developing an environmental management plan, with due regard to the associated costs. Impacts are identified by reference to a project's features and pre-construction environmental considerations. These elements are covered in the model environmental brief provided to the PRONAP. These documents are given to contractors and supervisors so they will fully satisfy the environmental requirements.

4. Institutional feasibility

- 4.21 The program is considered feasible from an institutional standpoint given that all of the participants have years of experience performing the functions assigned to them in this program and which they will continue to perform in this new operation, as explained in chapter III, section B(3) of this proposal.
- 4.22 The organizational and institutional scheme to be used will be the same that has been used successfully for the current program financed by loan 1058/OC-PE.

B. Benefits and risks of the program

1. Benefits

- 4.23 The program will allow for faster reconstruction of structures damaged by El Niño than could be achieved without external financing. The reconstruction activities, in turn, will stimulate the economic development of the areas concerned and allow for economic recovery and a return to economic and social development in the departments most affected by El Niño. Lastly, the program will directly benefit the

poor population in the program's service areas, in accordance with the country's poverty map.

2. Risks

- 4.24 One possible risk is that the reconstruction of works under the jurisdiction of regional and local governments could suffer delays from potential lack of coordination between these entities and the subexecuting agencies. The risk is minimized due to the high priority and interest those governments attach to the reconstruction works proposed in the program.
- 4.25 Another possible risk of the program is that, given the large number of small-scale works in various sectors, there will be delays in execution. This risk is minimized by the selection of five subexecuting agencies with extensive experience in the contracting of works under their responsibility, and the grouping of the works into specific bid packages. Further, the lessons learned during the execution of program 1058/OC-PE have made it possible to incorporate the experience into the execution of the proposed program, particularly as regards contracting processes.

ITEMIZED TABLE OF COSTS
Program for reconstruction of infrastructure damaged by El Niño
(US\$)

	Bank	Local	Total
1. Component 1: Transportation sector	56,364,159	21,276,391	77,640,550
1.1 Reconstruction of three main highways	36,965,650	12,687,230	49,652,880
1.1.1 Lambayeque highway (Package 1)	15,112,500	5,037,500	20,150,000
1.1.2 Sullana highway (Package 2)	12,398,160	4,132,720	16,530,880
1.1.3 Los Organos highway (Package 3)	7,481,250	2,493,750	9,975,000
1.1.4 Supervision	1,973,740	433,260	2,407,000
1.1.5 Management and monitoring	-	590,000	590,000
1.2 Rehabilitation of rural road infrastructure	8,569,912	3,585,108	12,155,020
1.2.1 Four packages of rural roads works	7,747,350	2,582,450	10,329,800
1.2.2 Supervision	422,562	92,758	515,320
1.2.3 Management and monitoring	-	309,900	309,900
1.2.4 Contingencies	400,000	600,000	1,000,000
1.3 Reconstruction of urban infrastructure	7,900,637	3,117,013	11,017,650
1.3.1 Four packages of roadways and sidewalks works	6,687,750	2,229,250	8,917,000
1.3.2 Studies	487,290	-	487,290
1.3.3 Supervision	365,597	80,253	445,850
1.3.4 Management and monitoring	-	267,510	267,510
1.3.5 Contingencies	360,000	540,000	900,000
1.4 River bank reinforcement to protect road infrastructure and population centers	2,927,960	1,887,040	4,815,000
1.4.1 Four packages of works in 10 departments	2,610,520	1,228,480	3,839,000
1.4.2 Studies	-	269,000	269,000
1.4.3 Supervision	157,440	34,560	192,000
1.4.4 Management and monitoring	-	115,000	115,000
1.4.5 Contingencies	160,000	240,000	400,000
2. Component 2: Sanitation sector	19,840,376	9,078,934	28,919,310
2.1 Reconstruction of water and sewerage systems	19,840,376	9,078,934	28,919,310
2.1.1 Four packages of works	17,761,779	7,612,191	25,373,970
2.1.2 Studies	134,000	-	134,000
2.1.3 Supervision	1,944,597	426,863	2,371,460
2.1.4 Management and monitoring	-	1,039,880	1,039,880
3. Component 3: Health and education sectors	30,442,730	18,722,370	49,165,100
3.1 Repair of 94 health centers	7,296,468	3,342,762	10,639,230
3.1.1 Two packages	6,989,190	2,831,620	9,820,810
3.1.2 Supervision	307,279	67,451	374,730
3.1.3 Management and monitoring	-	443,690	443,690
3.2 Repair of 254 schools	23,146,262	11,742,918	34,889,180
3.2.1 Eight packages	21,767,769	9,492,791	31,260,560
3.2.2 Supervision	1,378,494	302,596	1,681,090
3.2.3 Management and monitoring	-	1,947,530	1,947,530
3.3 Health and school equipment	-	3,636,690	3,636,690
3.3.1 School furnishings	-	2,799,790	2,799,790
3.3.2 Health equipment	-	836,900	836,900

	Bank	Local	Total
4. Strengthening of the PCU	2,300,000	700,000	3,000,000
4.1 Coordinating unit and advisory services	2,000,000	600,000	2,600,000
4.2 Audits (financial, operational, environmental, and special report)	300,000	100,000	400,000
Subtotal	108,947,266	49,777,694	158,724,960
5. Financing costs	11,052,734	1,222,306	12,275,040
5.1 Interest during execution	9,852,734	-	9,852,734
5.2 Credit fee	-	1,222,306	1,222,306
5.3 Inspection and supervision	1,200,000	-	1,200,000
TOTAL	120,000,000	51,000,000	171,000,000
	70%	30%	100%

Procurement Plan

Main procurements	Financing (US\$ millions)		Method*	Prequalif.	Quarter/Year
	IDB	LOCAL			
Consulting services					
Audits (3)	0.3	0.1	ICP	YES	IV / 2000, 01 and 02
Supervision, main road system	2.0	0.4	ICP	YES	I / 2000
Supervision, rural roads (4)	0.4	0.1	CP	NO	I / 2000
Supervision, roadways and sidewalks (4)	0.4	0.1	CP	NO	I / 2000
Supervision, riverbank reinforcement	0.2	0.0	CP	NO	IV / 99 and I / 2000
Supervision, sanitation	1.9	0.4	ICP	YES	I and II / 2000
Supervision, health	0.3	0.1	ICP	YES	II and III / 2000
Supervision, education	1.4	0.3	ICP	YES	II and III / 2000
Studies, roadways and sidewalks	0.5	0.0	CP	NO	IV / 99
Studies, riverbank reinforcement	0.0	0.3	CP	NO	IV / 99
Studies, sanitation	0.1	0.0	CP	NO	IV / 99
Civil works					
a. Transportation:					
-Main road system					
3 packages	35.0	11.8	ICB	YES	II /2000
-Rural roads					
4 packages	7.7	2.6	LCB	NO	I / 2000
-Urban roadways					
4 packages	6.7	2.2	LCB	NO	II /2000
-Riverbank reinforcement					
4 packages	2.6	1.2	LCB	NO	II /2000
b. Sanitation:					
4 Packages	17.8	7.6	ICB (3)/ LCB (1)	YES for ICB	IV / 99 and II/2000
c. Education and health:					
-Education					
8 packages	21.7	9.5	ICB	YES	III and IV/2000
-Health					
2 packages	6.9	2.8	ICB	YES	III and IV/2000

*CP call for proposals
ICB international competitive bidding
ICP international call for proposals
LCB local competitive bidding

LOGICAL FRAMEWORK
PROGRAM FOR RECONSTRUCTION OF INFRASTRUCTURE DAMAGED BY EL NIÑO
(EXPANSION OF LOAN 1058/OC-PE)

	Indicators	Means of verification	Assumption
Program is to normalize the economic and social development of the departments affected by El Niño.			
Purpose of the program is to rebuild physical infrastructure and services damaged by El Niño in the sectors of sanitation, education and health sectors.	Structures reconstructed and in operation by mid-2003.	<ul style="list-style-type: none"> • Bank monitoring mechanisms. • Financial/operational audits. • Evaluations. 	That the government continue to give priority to the reconstruction through the allocation of local counterpart funds.
Sanitation sector	By the end of 2002, program works in operation.	<ul style="list-style-type: none"> • Bank monitoring mechanisms. 	That the government continue to give priority to the reconstruction.
Health sector	By the end of 2003, program works in operation.	<ul style="list-style-type: none"> • Financial and operational audits. • Evaluations. 	That work of the various government entities with jurisdiction over health works in different localities be coordinated.
Education sectors	By the end of 2003, program works in operation.		
Sanitation sector	By the end of 2001, the three sections of main highways in operation.	<ul style="list-style-type: none"> • Bank monitoring mechanisms. • Audits • Evaluations 	That work of the various government entities with jurisdiction over infrastructure works in different localities be coordinated.
Reconstruction of three main highway sections: Chicla-Bayovar Bypass-Piura; Sullana-Talara; and Los Organos-Aguas Verdes.	By the end of 2000: 60% of works in operation. By the end of 2001: 100% of works in operation.		
Reconstruction of rural road infrastructure: 75 works in four bid packages.	By the end of 2000: 40% of works in operation. By the end of 2001: 100% of works in operation.		

	Indicators	Means of verification	Assumptions
tion of urban infrastructure: 19 works four bid packages.	By the end of 2000: 50% of works in operation. By the end of 2001: 100% of works in operation.		
tion of riverbank reinforcement for of road infrastructure and population centers: grouped in four bid packages.	By the end of 2000: 40% of works in operation. By the end of 2001: 70% of works in operation. By the end of 2002: 100% of works in operation.		
ction of 395 sanitation works grouped in packages.	By the end of 2000: 25% of works in operation. By the end of 2001: 50% of works in operation. By the end of 2002: 75% of works in operation. By the middle of 2003: 100% of works in operation.	<ul style="list-style-type: none"> • Bank monitoring mechanisms. • Audits • Evaluations 	That work of the various entities with jurisdiction o works in different localiti coordinated.
works in the health and education sectors.			That the work of the vario government agencies with over the works in differen duly coordinated.
4 health facilities, grouped in two bid	By the end of 2000: 25% of works in operation. By the end of 2001: 50% of works in operation.	<ul style="list-style-type: none"> • Bank monitoring mechanisms. • Audits • Evaluations 	
54 schools, grouped in eight bid packages.	By end of 2002: 75% of works in operation. By the end of 2003: 100% of works in operation.		

LESSONS LEARNED FROM EXPERIENCE IN DEALING WITH THE 1998 EL NIÑO EVENT

- 1.1 This annex presents some of the most important lessons learned, compiled by the PCU, from the measures implemented to deal with the 1998 El Niño. These lessons are particularly applicable to the prevention and emergency phases. The ideas summed up here, and further experience that will be built up over the course of the proposed program, will serve as the basis for systematizing the experience and transferring it when the financing proposed herein has been executed.
- 1.2 El Niño left its mark on Peru on several fronts: socially, economically, and organizationally. From 1997 to 1999, various types of actions have been carried out, making it possible to deal successfully with this phenomenon. It is important to draw on this experience to optimize efforts in future situations of this type.
 1. **Separation by stages.** Experience has shown the importance of maintaining a clear concept of the three stages for dealing with the phenomenon: prevention, emergency measures, and reconstruction, since this has made it possible to define clearly the actions that need to be executed in each phase, and understand the need to organize public institutions.
 2. **From the point of view of disaster-response organization:** (i) it is of paramount importance that central government institutions have an internal body that can respond rapidly in terms of budget, human resources, procedures concordant with national laws and those of multilateral lending agencies; (ii) it is essential to have a central agency that plans, coordinates and manages the activities; and (iii) aspects related to statistical information become particularly important in the prevention and emergency stages, especially those having to do with quality of statistical information, in order to schedule needed actions and plan the scale of works to be undertaken in regard to prevention.
 3. **In regard to execution itself,** the most important considerations are: (i) during the prevention and emergency stages, proper application of budgetary execution rules is one of the issues that merits the greatest possible clarity of definition, to avoid interpretations that might disrupt the execution process; (ii) having professionals and technical officers able to respond to the situation is critical, since lack of understanding of processes and standards can impede a quick, timely disaster response; and (iii) a solid knowledge of the procurement procedures of external financing organizations is crucial to expediting execution. Experience has demonstrated that processes normally are delayed because of unfamiliarity with local procurement principles and requirements and those of external financing organizations. If the national laws are broadened, standard bidding documents would need to be prepared.

4. **The technical aspects** that stand out are: (i) the need, during the preparation of studies, for a clear definition of alternative solutions to be devised, avoiding the need for technical reports to be reformulated; (ii) include, as part of supervision, studies that complement the proposed solution, or redesign them for technical and economic reasons; (iii) require construction supervisors to find solutions that address economies of scale; (iv) have clear parameters for selection of contractors, in order to avoid delays; (v) avoid small contractors that lack solvency; and (vi) have information that makes it possible to clarify the contract capacity of local enterprises.
 5. **From the financial point of view:** Two important points are (i) the need to manage resources in harmony with cash management and budget rules, hence, in the case of a central mechanism to distribute funds to various subexecuting agencies, a clear definition of the procedure for transferring, recording and accounting for funds by the transferor and the recipient is crucial; and (ii) the need to manage resources expeditiously, taking care not to have funds immobilized, particularly external funds that are costly for the country.
 6. **From the social point of view,** serving the stricken population quickly should be the responsibility not only of public institutions such as INDECI but also of the National Food Support Program, the Materials Bank and sanitation enterprises. However, the import of these actions could be diminished without the management and monitoring of a central agency that coordinates and prioritizes work.
- 1.3 Some **preliminary recommendations** derived from the experience are the following:
- a. **In regard to prevention:** (i) the sectors should identify regions highly vulnerable to weather events like the 1998 El Niño; (ii) consider providing, in government budgets, resources to minimize the risks to the vulnerable regions; (iii) have a national commission or body to monitor such an effort and alert and guide the government as to probable emergency situations, with support from local and international scientific institutions; and (iv) the institutions responsible for monitoring climatic and hydrologic aspects should be strengthened, by instituting a modern forecasting system, involving institutions such as the National Meteorologic and Hydrologic Service (SENHAMI), the Geophysical Institute of Peru, the Directorate of Hydrography and Navigation of the Peruvian Navy, and the Maritime Institute of Peru (IMARPE). As a follow-on to this effort, coordination levels and cross-sectoral agencies responsible for forecasting should be strengthened; in Peru these are represented by the Multisectoral Committee for the National Study of the El Niño Phenomenon (ENFEN).
 - b. **Organization and coordination in emergency and reconstruction situations:** The agency executing emergency or reconstruction actions should be a single institution or agency equipped to coordinate with the highest levels of the central

government and with local governments, to make for effective and orderly execution of projects.

- c. **In terms of the method of execution:** (i) execution processes during the emergency stage should be governed by national legislation, which envisages various methods, according to the cost and complexity of each work; and (ii) the reconstruction works, according to their scale and the time required for execution, can easily be adapted to the procedures and policies established in agreements with international organizations.
- d. **In terms of the repositories of experience gained,** some options, subject to further consultations with the pertinent national authorities, could include the following: (i) accounts of experiences and the technical and other documentation should be transferred to the National Civil Defense Institute; and (ii) the responsible ministries could be the repository of sectoral technical archives.

PROPOSED RESOLUTION

PERU. LOAN ____/OC-PE TO THE REPUBLIC OF PERU
Program For The Reconstruction Of Infrastructure Works Affected By The “El Niño”
Phenomena.

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 Republic of Peru, as Borrower, for the purpose of granting it a financing to cooperate in the execution of a Program for the Reconstruction of Infrastructure Works Affected by the “El Niño” Phenomena. Such financing will be for the amount of up to one hundred twenty million dollars of the United States of America (US\$120,000,000) from the Single Currency Facility of the Ordinary Capital Resources of the Bank, and will be subject to the “Special Contractual Conditions” and the “Terms and Financial Conditions” of the Executive Summary of the Loan Proposal.