

7. TRANSPORT AND COMMUNICATIONS SECTOR

SUMMARY: TRANSPORT AND COMMUNICATIONS SECTOR

(Thousands of US dollars)

| Number | Title | Investment | External financing |
|---------|--|------------|--------------------|
| 11.7.1 | Rehabilitation of the Sébaco-Matagalpa-Jinotega section: Sixth Region | 235.8 | 210 |
| 11.7.2 | Rehabilitation of the Jinotega-Asturias-Pantasma-Wiwili section: Sixth Region | 2 727.5 | 2 300 |
| 11.7.3 | Rehabilitation of the stretch of roadway La Mora-El Carmen-Waslala-Iyos section: Sixth Region | 4 534 | 4 000 |
| 11.7.4 | Rehabilitation of the San Gabriel-Mancotal-Las Cruces section: Sixth Region | 600 | 500 |
| 11.7.5 | Rehabilitation of the Santa Rita-San Dionisio-Esquípulas-Muy Muy section: Sixth Region | 1 100 | 1 000 |
| 11.7.6 | Rehabilitation of the San Ramón-El Jobo-Matiguas section: Sixth Region | 1 345 | 1 200 |
| 11.7.7 | Rehabilitation and reconstruction of the Matiguas-Río Blanco-Mulukuku section: Sixth Region | 4 407.5 | 3 960 |
| 11.7.8 | Rehabilitation and reconstruction of the Pueblo Nuevo-La Colonia-Abisinia-El Cua-Bocay section: Sixth Region | 2 342.5 | 2 100 |
| 11.7.9 | Rehabilitation of the Matagalpa-Apante section: Sixth Region | 905 | 800 |
| 11.7.10 | Rehabilitation of the La Mora-La Chata-El Portillo-El Cua section: Sixth Region | 1 275 | 1 100 |
| 11.7.11 | Rehabilitation of the inter-urban route linking Managua, Masaya, Granada and Tipitapa with branch roads to Guanacaste and Nandaimé: Sixth Region | 2 800 | 2 500 |
| 11.7.12 | Rehabilitation of paved access roads to the principal road in the Fourth Region | 2 000 | 1 700 |
| 11.7.13 | Rehabilitation of the San Benito-El Rama section: Fifth Region | 100 | 80 |
| 11.7.14 | Repair of slightly damaged bridges in the Fifth Region | 910 | 800 |
| 11.7.15 | Rehabilitation of the Acopaya-San Carlos section: Third Special Zone | 2 046 | 1 800 |

| Number | Title | Investment | External financing |
|---------|---|------------------|-----------------------|
| II.7.16 | Reconstruction of roads used in transporting farm produce | 20 000 | 18 000 |
| II.7.17 | Machinery and equipment needed for the construction of road works | 25 000 | 25 000 |
| II.7.18 | Wooden bridges for roads in the tertiary road network: Fourth, Fifth and Sixth Regions and Third Special Zone | 2 000 | 1 300 |
| II.7.19 | Reactivation of river transport on the following rivers: the Siguio, the Rama, the Mico and the Escondido | 600 | 500 |
| II.7.20 | Rehabilitation of river transport in the South Atlantic Region | 2 510 | 2 510 |
| II.7.21 | Repair of port installations and equipment | 12 000 | 10 000 |
| II.7.22 | Rehabilitation of railway lines | 600 | 500 |
| II.7.23 | Strengthening of planning | 300 | 200 |
| II.7.24 | Rehabilitation of the telephone systems of Bluefields, El Bluff, El Rama and various small localities | 680 | 600 |
| II.7.25 | Renovation and modernization of the telephone system in the eastern area: Fifth Region and Second and Third Special Zones | 15 000 | 13 000 |
| | <u>Total</u> | <u>106 018.3</u> | <u>95 660</u> |

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the Sébaco-Matagalpa-Jinotega section: Sixth Region

Project objectives: To rehabilitate key road infrastructure.

Description of activities to be carried out: Reconstruction and paving of 356 metres of roadway which were destroyed and repairing 400 metres which were damaged.

Expected project output: Restoration of this section to a condition that would permit normal vehicular traffic and minimize transportation costs.

Total investment required: US\$ 235 840

| <u>Breakdown</u> (US\$) | | <u>Financing</u> (US\$) | 235 840 |
|-------------------------|---------|-------------------------|---------|
| - Manpower: | 47 160 | Local: | 25 840 |
| - National inputs: | 35 380 | External: | 210 000 |
| - Imported inputs: | 153 300 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 1 year

Estimated starting date: January 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the stretch of roadway Jinotega-Asturias, Pantasma-Wiwili
section: Sixth Region

Project objectives: To rehabilitate key road infrastructure.

Description of activities to be carried out: Reconstruction of seven kilometres of destroyed roadway and various repairs over 90 kilometres.

Expected project output: Restoration of this roadway to a condition that would permit normal vehicular traffic and minimize transportation costs.

Total investment required: US\$ 2 727 500

Breakdown (US\$)Financing (US\$) 2 727 500

| | | | |
|--------------------|---------|-----------|-----------|
| - Manpower: | 927 350 | Local: | 427 500 |
| - National inputs: | 818 250 | External: | 2 300 000 |
| - Imported inputs: | 981 900 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 3 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the La Mora-El Carmen-Waslala-Iyos section: Sixth Region

Project objectives: To re-establish key road infrastructure.

Description of activities to be carried out: Removal of debris and collapsed structures, filling in and compacting sunken and undermined areas, repairs to the El Carmen, Babasca, Waslala 1 and 2, Kusuli and Las Lajas bridges. Construction of the Carpas, Manceras, Yaosca 1 and 2 and Guabo bridges.

Expected project output: Restoration of conditions permitting traffic on this section and provision of easy access to relatively isolated rural farm areas.

Total investment required: US\$ 4 534 000

| <u>Breakdown</u> (US\$) | | <u>Financing</u> (US\$) | 4 534 000 |
|-------------------------|-----------|-------------------------|-----------|
| - Manpower: | 1 213 400 | Local: | 534 000 |
| - National inputs: | 1 008 600 | External: | 4 000 000 |
| - Imported inputs: | 2 312 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 5 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the San Gabriel-Mancotal-Las Cruces section: Sixth Region

Project objectives: To rehabilitate key road infrastructure.

Description of activities to be carried out: Repairs to 30 kilometres of damaged roadway.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this section.

Total investment required: US\$ 600 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$)</u> | 600 000 |
|-------------------------|---------|-------------------------|---------|
| - Manpower: | 204 000 | Local: | 100 000 |
| - National inputs: | 180 000 | External: | 500 000 |
| - Imported inputs: | 216 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 6 months

Estimated starting date: December 1988

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the Santa Rita-San Dionisio-Esquipulas-Muy Muy section: Sixth Region

Project objectives: To rehabilitate key road infrastructure.

Description of activities to be carried out: Repairs to 55 kilometres of damaged roadway.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this section.

Total investment required: US\$ 1 100 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 1 100 000</u> | |
|-------------------------|---------|-----------------------------------|-----------|
| - Manpower: | 374 000 | Local: | 100 000 |
| - National inputs: | 396 000 | External: | 1 000 000 |
| - Imported inputs: | 396 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 2 years

Estimated starting date: 1990

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the San Ramón-El Jobo-Matigues section: Sixth Region

Project objectives: To re-establish key road infrastructure.

Description of activities to be carried out: Repairs to 54 kilometres of damaged roadway and reconstruction of two kilometres of destroyed roadway.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this section.

Total investment required: US\$ 1 345 000

Breakdown (US\$)Financing (US\$) 1 345 000

| | | | |
|--------------------|---------|-----------|-----------|
| - Manpower: | 457 300 | Local: | 145 000 |
| - National inputs: | 403 500 | External: | 1 200 000 |
| - Imported inputs: | 484 200 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 2 years

Estimated starting date: 1990

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation and reconstruction of the Matiguas-Río Blanco-Mulukuku section:
Sixth Region

Project objectives: To rehabilitate key road infrastructure

Description of activities to be carried out: Removal of debris and collapsed structures, filling and compacting, reconstruction of five kilometres of roadway and of the Wilike, Wilikon and Mulukuku bridges and rehabilitation of 77 kilometres of damaged roadway.

Expected project output: Re-establishment of normal vehicular traffic conditions on this section and the provision of easy access to relatively isolated rural localities and productive farming areas.

Total investment required: US\$ 4 407 500

| <u>Breakdown</u> (US\$) | | <u>Financing</u> (US\$) 4 407 500 | |
|-------------------------|-----------|-----------------------------------|-----------|
| - Manpower: | 1 189 850 | Local: | 447 500 |
| - National inputs: | 991 500 | External: | 3 960 000 |
| - Imported inputs: | 2 226 150 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 5 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation and reconstruction of the Pueblo Nuevo-La Colonia-Abisinia-El Cua-Bocey section: Sixth Region

Project objectives: To rehabilitate key road infrastructure.

Description of activities to be carried out: Repairs to 84 kilometres of damaged roadway and reconstruction of five kilometres of roadway that was destroyed.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this section.

Total investment required: US\$ 2 342 500

Breakdown (US\$)Financing (US\$) 2 342 500

| | | | |
|--------------------|---------|-----------|-----------|
| - Manpower: | 796 450 | Local: | 242 500 |
| - National inputs: | 702 750 | External: | 2 100 000 |
| - Imported inputs: | 843 300 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 3 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the Matagalpa-Apante section: Sixth Region

Project objectives: To re-establish key road infrastructure.

Description of activities to be carried out: Repairs to 32 kilometers of damaged roadway and to two kilometers of destroyed roadway.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this sector.

Total investment required: US\$ 905 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 905 000</u> | |
|-------------------------|---------|---------------------------------|---------|
| - Manpower: | 307 700 | Local: | 105 000 |
| - National inputs: | 271 500 | External: | 800 000 |
| - Imported inputs: | 325 800 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 2 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the La Mora-La Chata-El Portillo-El Cua section: Sixth Region

Project objectives: To re-establish key road infrastructure.

Description of activities to be carried out: Repairs to 24 kilometres of damaged roadway and to 6 kilometres of destroyed roadway.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this section.

Total investment required: US\$ 1 275 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$)</u> 1 275 000 | |
|-------------------------|---------|-----------------------------------|-----------|
| - Manpower: | 433 500 | Local: | 175 000 |
| - National inputs: | 382 500 | External: | 1 100 000 |
| - Imported inputs: | 459 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 2 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the inter-urban route linking Managua, Masaya, Granada and Tipitapa with branch roads to Guanacaste and Nandaine: Fourth Region

Project objectives: To restore the level of service which the route offered prior to the disaster.

Description of activities to be carried out: Filling in work, cleaning up debris and removal of obstructions from culverts and drains; minor repairs to the Mayaris, La Barranca, El Arroyo and Ochomogo bridges. Reconstruction of 11.3 kilometres of destroyed roadways.

Expected project output: Elimination of possibility of further damage and/or of obstructions during the rainy season.

Total investment required: US\$ 2 800 000

Breakdown (US\$)Financing (US\$) 2 800 000

| | | | |
|--------------------|-----------|-----------|-----------|
| - Manpower: | 560 000 | Local: | 300 000 |
| - National inputs: | 840 000 | External: | 2 500 000 |
| - Imported inputs: | 1 400 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 6 months

Estimated starting date: December 1988

Special observations: This set of activities complements those provided for in Project II.7.12. This project is part of the priority phase of rehabilitation.

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of paved feeder roads to the principal road in the Fourth Region

Project objectives: To restore the previous level of service.

Description of activities to be carried out: Cleaning and filling-in operations over a total length of 100 kilometres of feeder roads to the main road network.

Expected project output: Prevention of further damage and/or of obstructions during the rainy season.

Total investment required: US\$ 2 000 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 2 000 000</u> | |
|-------------------------|---------|-----------------------------------|-----------|
| - Manpower: | 680 000 | Local: | 300 000 |
| - National inputs: | 600 000 | External: | 1 700 000 |
| - Imported inputs: | 720 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 6 months

Estimated starting date: December 1988

Special observations: This set of activities complements those provided for in Project 11.7.11.

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the San Benito-El Rama section: Fifth Region

Project objectives: To rehabilitate key infrastructure.

Description of activities to be carried out: Reconstruction and paving of a badly sunken 80-metres stretch of roadway, and minor repairs.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this section.

Total investment required: US\$ 100 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 100 000</u> | |
|-------------------------|--------|---------------------------------|--------|
| - Manpower: | 20 000 | Local: | 20 000 |
| - National inputs: | 15 000 | External: | 80 000 |
| - Imported inputs: | 65 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 3 months

Estimated starting date: December 1988

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Repair of slightly damaged bridges in the Fifth Region.

Project objectives: To rehabilitate key road infrastructure.

Description of activities to be carried out: Repairing minor damage to the La Cusuca, Siguis, Piedra Colorada, El Rama and Verbena bridges.

Expected project output: Normal vehicular traffic conditions and minimal transportation costs on this sector.

Total investment required: US\$ 910 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 910 000</u> | |
|-------------------------|---------|---------------------------------|---------|
| - Manpower: | 309 400 | Local: | 110 000 |
| - National inputs: | 273 600 | External: | 800 000 |
| - Imported inputs: | 327 600 | | |

National agency in charge: Ministry of Construction and Transport.

Tentative duration: 1 year

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Rehabilitation of the Acoyapa-San Carlos section: Third Special Zone

Project objectives: To re-establish key road infrastructure.

Description of activities to be carried out: Repairs to 15 kilometres of roadway and to the bridge at Camastro; reconstruction of the Garrabito, Tepenaguazapa and La Emboscada bridges.

Expected project output: Re-establishment of roadworthiness on this section and the provision of easy access to relatively isolated rural localities and productive farming areas.

Total investment required: US\$ 2 046 000

| <u>Breakdown (US\$)</u> | <u>Financing (US\$) 2 046 000</u> |
|------------------------------|-----------------------------------|
| - Manpower: 409 000 | Local: 246 000 |
| - National inputs: 307 000 | External: 1 800 000 |
| - Imported inputs: 1 330 000 | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 3 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Reconstruction of roads used in transporting farm produce.

Project objectives: To re-establish the tertiary road network.

Description of activities to be carried out: Reconstruction of 1 758 kilometres of roadway in the Fourth, Fifth and Sixth Regions and in the Third Special Zone.

Expected project output: A feeder-road network providing farm produce and inhabitants of rural areas with access to the main and secondary road network.

Total investment required: US\$ 20 000 000

| <u>Breakdown</u> (US\$) | <u>Financing</u> (US\$) 20 000 000 |
|------------------------------|------------------------------------|
| - Manpower: 8 000 000 | Local: 2 000 000 |
| - National inputs: 4 000 000 | External: 18 000 000 |
| - Imported inputs: 8 000 000 | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 3 years

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Machinery and equipment needed for the construction of road works

Project objectives: To provide the Ministry of Construction and Transport with the machinery needed to repair and maintain roads and to deal with emergencies.

Description of activities to be carried out: Purchase of machinery and equipment.

Expected project output: Reduced operating costs of the Ministry of Construction and Transport and the independence and flexibility it needs to act directly in emergency situations.

Total investment required: US\$ 25 000 000

| | |
|-------------------------------|----------------------------------|
| <u>Breakdown</u> (US\$) | <u>Financing</u> (US) 25 000 000 |
| - Manpower: | Local: |
| - National inputs: | External: 25 000 000 |
| - Imported inputs: 25 000 000 | |

National agency in charge: Ministry of Construction and Transport

Tentative duration:

Estimated starting date:

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Roads

Project title: Wooden bridges for roads in the tertiary road network: Fourth, Fifth and Sixth Regions and Third Special Zone

Project objectives: To reduce economic and financial costs of the construction of roads in productive farm areas.

Description of activities to be carried out: Construction of wooden bridges for roads in the tertiary road network, using technology developed by UNIDO and the lumber available in the zones affected by the disaster.

Expected project output: A stock of short bridges, the creation of productive employment and the development of renewable natural resources.

Total investment required: US\$ 2 000 000

Breakdown (US\$)Financing (US\$) 2 000 000

- Manpower: 600 000

Local: 700 000

- National inputs: 700 000

External: 1 300 000

- Imported inputs: 700 000

National agency in charge: MIDINRA

Tentative duration: 1 year

Estimated starting date: As soon as possible

Special observations: This project includes technical co-operation from UNIDO for one year. This initiative could be significantly expanded to include other regions and tertiary road networks.

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Water transport

Project title: Reactivation of river transport on the following rivers: the Siquio, the Rama, the Mico and the Escondido

Project objectives: To make the necessary water vessels available.

Description of activities to be carried out: Purchase of 200 wooden boats with 40-outboard motors.

Expected project output: The facilitation of the transport of goods and people by water and the minimization of operational costs.

Total investment required: US\$ 600 000

Breakdown (US\$)Financing (US\$) 600 000

| | | | |
|--------------------|---------|-----------|---------|
| - Manpower: | 100 000 | Local: | 100 000 |
| - National inputs: | 100 000 | External: | 500 000 |
| - Imported inputs: | 400 000 | | |

National agency in charge: Authority delegated by the Office of the President in the Fifth Region

Tentative duration: 6 months

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Water transport

Project title: Rehabilitation of water transport in the South Atlantic Region

Project objectives: To make available the water vessels needed for the transport of goods and people.

Description of activities to be carried out: Purchase of a 1 000-tugboat, two 1 000-ton barges, a 150-passenger vessel and a 1 000-ton vessel.

Expected project output: Facilitation of the transportation of goods and people by water and the minimization of operational costs.

Total investment required: US\$ 2 510 000

Breakdown (US\$)Financing (US\$) 2 510 000

| | | |
|--------------------|-----------|-----------|
| - Manpower: | Local: | |
| - National inputs: | External: | 2 510 000 |
| - Imported inputs: | | 2 510 000 |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 6 months

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Port facilities

Project title: Repair of port installations and equipment

Project objectives: To repair port infrastructure on the Atlantic Coast (Arlen Siu, El Bluff, Bluefields, and lakeside ports).

Description of activities to be carried out: Rehabilitation of damaged infrastructure and purchase of the necessary equipment.

Expected project output: Availability of the port terminals needed which would facilitate the handling of cargo and the movement of passengers.

Total investment required: US\$ 12 000 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 12 000 000</u> | |
|-------------------------|------------|------------------------------------|------------|
| - Manpower: | 1 000 000 | Local: | 2 000 000 |
| - National inputs: | 1 000 000 | External: | 10 000 000 |
| - Imported inputs: | 10 000 000 | | |

National agency in charge: National Port Authority (ENAP)

Tentative duration: 1 year

Estimated starting date: 1989

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Railways

Project title: Rehabilitation of railway lines

Project objectives: To rehabilitate the necessary railway infrastructure.

Description of activities to be carried out: Rehabilitation of the rail network and the foundations of bridges.

Expected project output: Adequate operation of the railways.

Total investment required: US\$ 600 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$) 600 000</u> | |
|-------------------------|---------|---------------------------------|---------|
| - Manpower: | 100 000 | Local: | 100 000 |
| - National inputs: | 100 000 | External: | 500 000 |
| - Imported inputs: | 400 000 | | |

National agency in charge: Ministry of Construction and Transport

Tentative duration: 1 year

Estimated starting date: 1989

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Technical assistance

Project title: Strengthening of planning

Project objectives: a) To optimize the use of the scarce investment resources available; b) to co-ordinate and rationalize the use and combination of the various modes of transport; c) to minimize overall costs (infrastructure costs plus operating costs) of the system, and d) to make the transportation system less vulnerable to unforeseen events.

Description of activities to be carried out: a) seeking technical assistance in the form of multilateral or bilateral co-operation; b) making a team of five national counterpart professionals available; c) preparing sectoral and subsectoral diagnostic studies and identifying policy strategy options; submitting the alternatives identified to a process of optimization and evaluating the resulting projects and measures.

Expected project output: Availability of a duly programmed set of instruments, whose application would help to optimize the transportation system.

Total investment required: US\$ 300 000

Breakdown (US\$)Financing (US\$) 300 000

| | | | |
|--------------------|---------|-----------|---------|
| • Manpower: | 60 000 | Local: | 100 000 |
| - National inputs: | 40 000 | External: | 200 000 |
| - Imported inputs: | 200 000 | | |

National agency in charge: Department of Planning and the Budget

Tentative duration: 2 years

Estimated starting date: 1980

Special observations: The national contribution would consist in the participation of five local officials and in the bearing of the operating expenses of the working group (tools, secretariat, etc.). The external contribution would finance an expert for two years and cover computers, photocopy machines, etc.

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Communications

Project title: Rehabilitation of the telephone systems of Bluefields, El Bluff, El Rama and various small localities.

Project objectives: To re-establish this essential means of communication in the above-mentioned localities.

Description of activities to be carried out: Replacing external plants, switchboards, generating subsystems, microwave equipment, pylons, antennas, buildings and installations.

Expected project output: The re-establishment of telephone services for 600 subscribers in Bluefields, 100 subscribers in El Rama, 60 subscribers in El Bluff and 60 subscribers in various other municipalities.

Total investment required: US\$ 680 000

Breakdown (US\$)Financing (US\$) 680 000

| | |
|--------------------|---------|
| - Manpower: | 130 000 |
| - National inputs: | 60 000 |
| - Imported inputs: | 490 000 |

| | |
|-----------|---------|
| Local: | 80 000 |
| External: | 600 000 |

National agency in charge: TELCOR

Tentative duration: 8 months

Estimated starting date: December 1988

Special observations:

PROJECT OUTLINE

Sector: Transport and communications

Subsector: Communications

Project title: Renovation and modernization of the telephone system in the eastern area: Fifth Region and Second and Third Special Zones

Project objectives: To provide a modern telephone subsystem which operates independently and telephone services for 5 000 subscribers.

Description of activities to be carried out: Obtaining microwave systems, establishing an interurban exchange in Jiagalpa and installation of 5 000 telephone lines.

Expected project output: Significant improvements in the quality and scope of service and establishment of a service which would be independent of the telephone exchange in Managua.

Total investment required: US\$ 15 000 000

Breakdown (US\$)Financing (US\$) 15 000 000

| | | | |
|--------------------|------------|-----------|------------|
| - Manpower: | 1 000 000 | Local: | 2 000 000 |
| - National inputs: | 1 000 000 | External: | 13 000 000 |
| - Imported inputs: | 13 000 000 | | |

National agency in charge: TELCOR

Tentative duration: 5 years

Estimated starting date: 1990

Special observations:

8. DRINKING WATER AND SANITATION SECTOR

SUMMARY: DRINKING WATER AND SANITATION SECTOR

(Thousands of US dollars)

| Number | Title | Investment | External financing |
|--------------|---|---------------|-----------------------|
| II.8.1 | Basic sanitation system for the city of Bluefields | 10 000 | 9 000 |
| II.8.2 | Drinking-water supply system for the city of Bluefields | 12 000 | 11 000 |
| II.8.3 | Drinking-water supply and environmental sanitation for El Rama, La Esperanza and other settlements in the Fifth Region | 2 500 | 2 200 |
| II.8.4 | Drinking-water supply and environmental sanitation for Corn Island: RAAS | 1 100 | 950 |
| II.8.5 | Drinking-water supply and environmental sanitation for the Nueva Guinea area: Fifth Region | 1 500 | 1 300 |
| II.8.6 | Rural drinking-water supply for the Fifth Region | 6 000 | 3 600 |
| II.8.7 | Rural drinking-water supply for the South Atlantic Autonomous Region | 2 100 | 1 500 |
| II.8.8 | Replacement of equipment for pumping drinking water in the Fourth, Fifth and Sixth Regions | 350 | 300 |
| II.8.9 | System for the collection and disposal of solid wastes in the municipality of Bluefields: RAAS | 120 | 115 |
| <u>Total</u> | | <u>35 670</u> | <u>29 965</u> |

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector: Sanitation

Project title: Basic sanitation system for the city of Bluefields

Project objectives: To improve the health conditions of the population by constructing an adequate system for the disposal of waste and the evacuation of rain water.

Description of activities to be carried out: Evaluation of alternative technologies for the disposal of human waste in Bluefields. Design and construction of the most adequate systems.

Expected project output: A sanitation system which will cater for the needs of approximately 41 000 people. Reduced risk of infectious diseases.

Total investment required: US\$ 10 000 000

Breakdown (US\$)Financing (US\$) 10 000 000

| | | | |
|--------------------|-----------|-----------|-----------|
| - Manpower: | 3 200 000 | Local: | 1 000 000 |
| - National inputs: | 4 300 000 | External: | 9 000 000 |
| - Imported inputs: | 2 500 000 | | |

National agency in charge: Nicaraguan Institute of Aqueducts and Sewers

Tentative duration: 3 years

Estimated starting date: February 1989

Special observations:

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector: Drinking water

Project title: Drinking-water-supply system for the city of Bluefields

Project objectives: To improve the health conditions of the population through the construction of a piped drinking-water-supply system.

Description of activities to be carried out: Updating of engineering designs. Construction of collection and storage system, pumping stations and treatment plants. Construction of storage tanks, regulation and laying of mains and feeder pipes. Installation of pipelines to houses.

Expected project output: A system of water supply covering approximately 41 000 people. Improved health conditions for the population served.

Total investment required: US\$ 12 000 000

Breakdown (US\$)Financing (US\$) 12 000 000

| | | | |
|--------------------|-----------|-----------|------------|
| - Manpower: | 3 600 000 | Local: | 1 000 000 |
| - National inputs: | 2 400 000 | External: | 11 000 000 |
| - Imported inputs: | 6 000 000 | | |

National agency in charge: Nicaraguan Institute of Aqueducts and Sewers

Tentative duration: 3 years

Estimated starting date: February 1989

Special observations:

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector:

Project title: Drinking-water supply and environmental sanitation for El Rama, La Esperanza and other settlements in the Fifth Region

Project objectives: To improve the health conditions of 2 200 affected families by installing adequate drinking-water-supply and environmental sanitation systems.

Description of activities to be carried out: Identification of the settlements affected and design of the systems. Construction of works for collecting, piping, storing and treating drinking water. Laying of distribution pipelines and installation of 2 200 connections to houses. Construction of environmental sanitation facilities.

Expected project output: 2 200 families served by an adequate drinking-water-supply and environmental sanitation system in El Rama, La Esperanza, El Recreo and Presillas. Improved health conditions for the population served.

Total investment required: US\$ 2 500 000

Breakdown (US\$)Financing (US\$) 2 500 000

| | | | |
|--------------------|-----------|-----------|-----------|
| - Manpower: | 750 000 | Local: | 300 000 |
| - National inputs: | 550 000 | External: | 2 200 000 |
| - Imported inputs: | 1 200 000 | | |

National agency in charge: Nicaraguan Institute of Aqueducts and Sewers

Tentative duration: 2 years

Estimated starting date: February 1989

Special observations:

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector:

Project title: Drinking-water supply and environmental sanitation for Corn Island: RAAS

Project objectives: To improve the health conditions of approximately 900 affected families by installing adequate drinking-water-supply and environmental sanitation systems.

Description of activities to be carried out: Evaluation of technological alternatives and design of the systems. Construction of works for the supply of drinking water and the disposal of human waste. Evaluation of the project.

Expected project output: 900 families served by an adequate drinking-water-supply and environmental sanitation system. Improved health conditions for the population served.

Total investment required: US\$ 1 100 000

Breakdown (US\$)Financing (US\$) 1 100 000

| | | | |
|--------------------|---------|-----------|---------|
| - Manpower: | 300 000 | Local: | 150 000 |
| - National inputs: | 300 000 | External: | 950 000 |
| - Imported inputs: | 500 000 | | |

National agency in charge: Nicaraguan Institute of Aqueducts and Sewers

Tentative duration: 2 years

Estimated starting date: February 1989

Special observations:

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector:

Project title: Drinking-water supply and environmental sanitation for the Nueva Guinea area: Fifth Region

Project objectives: To improve the health conditions of approximately 2 000 affected families by supplying drinking water and environmental sanitation.

Description of activities to be carried out: Evaluation of the technological alternatives and designing ways of serving this dispersed population. Construction of works for the supply of drinking water (ground and/or surface water) and to ensure environmental sanitation. Implementation of programmes to teach the community to operate and maintain the facilities constructed.

Expected project output: Adequate drinking-water supply and environmental sanitation for 2 000 families. Improved health conditions for the population served.

Total investment required: US\$ 1 500 000

Breakdown (US\$)Financing (US\$) 1 500 000

| | | | |
|--------------------|---------|-----------|-----------|
| - Manpower: | 500 000 | Local: | 200 000 |
| - National inputs: | 400 000 | External: | 1 300 000 |
| - Imported inputs: | 600 000 | | |

National agency in charge: Office of the President: Fifth Region

Tentative duration: 2 years

Estimated starting date: February 1989

Special observations:

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector: Drinking water

Project title: Rural drinking-water supply for the Fifth Region

Project objectives: To improve the health conditions of approximately 10 000 affected families, through an adequate supply of drinking water.

Description of activities to be carried out: Evaluation of alternative technologies and design of systems capable of meeting the needs of the rural population. Construction of works for the supply of drinking water (ground/surface/rain-water) and implementation of programmes to train the community to operate and maintain those works.

Expected project output: 10 000 families adequately supplied with drinking water. Improved health conditions for the population served.

Total investment required: US\$ 6 000 000

| <u>Breakdown</u> (US\$) | | <u>Financing</u> (US\$) 6 000 000 | |
|-------------------------|-----------|-----------------------------------|-----------|
| - Manpower: | 2 400 000 | Local: | 2 400 000 |
| - National inputs: | 1 700 000 | External: | 3 600 000 |
| - Imported inputs: | 1 900 000 | | |

National agency in charge: Office of the President: Fifth Region

Tentative duration: 4 years

Estimated starting date: February 1989

Special observations: External assistance will be required from an expert in rural drinking-water supply programmes. The construction of latrines is provided for in the housing reconstruction projects.

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector: Drinking water

Project title: Rural drinking-water supply for the South Atlantic Autonomous Region (RAAS)

Project objectives: To improve the health conditions of approximately 2 500 affected families, through an adequate supply of drinking water.

Description of activities to be carried out: Evaluation of alternative technologies and design of systems to meet the needs of the rural population. Construction of works for the supply of drinking water (ground/surface/rain-water) and the implementation of programmes to teach the community to operate and maintain those works.

Expected project output: 2 500 families adequately supplied with drinking water. Improved health conditions for the population served.

Total investment required: US\$ 2 100 000

Breakdown (US\$)Financing (US\$) 2 100 000

| | | | |
|--------------------|---------|-----------|-----------|
| - Manpower: | 600 000 | Local: | 600 000 |
| - National inputs: | 700 000 | External: | 1 500 000 |
| - Imported inputs: | 800 000 | | |

National agency in charge: Office of the President: South Atlantic Autonomous Region

Tentative duration: 2 years

Estimated starting date: February 1989

Special observations: External assistance will be required from an expert in rural water-supply programmes. The construction of latrines is provided for in the housing reconstruction projects.

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector: Drinking water

Project title: Replacement of equipment for pumping drinking water in the Fourth, Fifth and Sixth Regions

Project objectives: To maintain the productive capacity of the drinking-water-supply system.

Description of activities to be carried out: Identifying the equipment to be replaced. Purchase, transport and storage of equipment.

Expected project output: An installed capacity similar to that which existed prior to the disaster.

Total investment required: US\$ 350 000

| <u>Breakdown</u> (US\$) | | <u>Financing</u> (US\$) 350 000 | |
|-------------------------|---------|---------------------------------|---------|
| - Manpower: | 10 000 | Local: | 50 000 |
| - National inputs: | 40 000 | External: | 300 000 |
| - Imported inputs: | 300 000 | | |

National agency in charge: Nicaraguan Institute of Aqueducts and Sewers

Tentative duration: 4 months

Estimated starting date: February 1989

Special observations:

PROJECT OUTLINE

Sector: Drinking water and sanitation

Subsector: Environmental sanitation

Project title: System for the collection and disposal of solid wastes in the Municipality of Bluefields: RAAS

Project objectives: To improve health conditions and urban administration in the Municipality of Bluefields by applying an adequate system for the collection and disposal of solid wastes.

Description of activities to be carried out: Design of a system for the disposal of solid wastes. Purchase of equipment and preparing the ground for the establishment and operation of the system.

Expected project output: System for the collection and disposal of solid wastes adequate for a population of 41 000.

Total investment required: US\$ 120 000

Breakdown (US\$)Financing (US\$) 120 000

| | | | |
|--------------------|---------|-----------|---------|
| - Manpower: | 5 000 | Local: | 5 000 |
| - National inputs: | 15 000 | External: | 115 000 |
| - Imported inputs: | 100 000 | | |

National agency in charge: Office of the President: South Atlantic Autonomous Region

Tentative duration: 8 months

Estimated starting date: February 1989

Special observations:

9. ENERGY SECTOR

SUMMARY: ENERGY SECTOR

(Thousands of US dollars)

| Number | Title | Investment | External financing |
|--------------|---|---------------|-----------------------|
| II.9.1 | Production, for export purposes, charcoal from the biomass from trees blown down in hurricane Joan | 21 500 | 10 100 |
| II.9.2 | Production of charcoal for domestic consumption | 2 010 | 915 |
| <u>Total</u> | | <u>23 510</u> | <u>11 015</u> |

PROJECT OUTLINE

Sector: Energy

Subsector: Biomass

Project title: Production, for export purposes, of charcoal from the biomass from trees blown down in hurricane Joan

Project objectives: To make good use of forest biomass which cannot be sawn for the production of exportable charcoal. To create sources of employment and income in the affected zones and to generate foreign exchange for the country. To facilitate access to timber which can be sawn.

Description of activities to be carried out: Installation of 2 000 conventional charcoal piles in 400 charcoal centres on the banks of navigable rivers in the affected zones. Purchase of power saws, storage of charred wood, transport of charcoal to storage areas (small launches), storage, transportation to port and processing for export.

Expected project output: Production of 84 000 tons of charcoal in 16 months. Exports worth US\$6.5 million to 8.5 million.

Total investment required: US\$ 21 500 000

Breakdown (US\$)Financing (US\$) 21 500 000

| | | | |
|--------------------|------------|-----------|------------|
| - Manpower: | 9 124 000 | Local: | 11 400 000 |
| - National inputs: | 11 400 000 | External: | 10 100 000 |
| - Imported inputs: | 1 016 000 | | |

National agency in charge: CORFOP-INE-COMSONICSA

Tentative duration: 20 months

Estimated starting date: 1989

Special observations: This project supplements Project No. 11.9.2.

PROJECT OUTLINE

Sector: Energy

Subsector: Biomass

Project title: Production of charcoal for domestic consumption

Project objectives: To make good use of forest biomass which cannot be sawn for the production of charcoal for domestic consumption. To take advantage of the installation of five portable sawmills to use the available biomass which cannot be sawn. To shift the production of charcoal from the Atlantic Region (where this resource is used indiscriminately) to the Pacific Zone.

Description of activities to be carried out: Fitting 60 metal helms to the five portable sawmills. Purchase of power saws, storage vessels and the necessary ground transport. Production of charcoal and its transport to Managua.

Expected project output: Production of 5 000 tons of charcoal per year at a price which is competitive with production costs in the Atlantic Region. Gradual reduction of pressure on the forests as the source of supply of the capital.

Total investment required: US\$ 2 010 000

Breakdown (US\$)

| | |
|--------------------|-----------|
| - Manpower: | 430 000 |
| - National inputs: | 1 095 000 |
| - Imported inputs: | 485 000 |

Financing (US\$) 2 010 000

| | |
|-----------|-----------|
| Local: | 1 095 000 |
| External: | 915 000 |

National agency in charge: CORFOPI-INE-COMSONICSA

Tentative duration: 2 years

Estimated starting date: 1 January 1989

Special observations: This project supplements Project No. 11.9.1.

10. PUBLIC BUILDINGS SECTOR

SUMMARY: PUBLIC BUILDINGS SECTOR

(Thousands of US dollars)

| Number | Title | Investment | External financing |
|--------------|--|------------|-----------------------|
| II.10.1 | Rehabilitation of rural day-care and food services for children in the Fifth and Sixth Regions and the Third Special Zone | 610 | 520 |
| <u>Total</u> | | <u>610</u> | <u>520</u> |

PROJECT OUTLINE

Sector: Public Buildings

Subsector: Social welfare

Project title: Rehabilitation of rural day-care and food services for children in the Fifth and Sixth Regions and the Third Special Zone

Project objectives: To continue the social welfare services provided to rural families.

Description of activities to be carried out: The design and construction of two day-care centres and three lunchrooms for children in rural areas. Evaluation of the project.

Expected project output: Five buildings for use in providing services to children in rural areas.

Total investment required: US\$ 610 000

| <u>Breakdown (US\$)</u> | | <u>Financing (US\$)</u> | 610 000 |
|-------------------------|---------|-------------------------|---------|
| - Manpower: | 180 000 | Local: | 90 000 |
| - National inputs: | 240 000 | External: | 520 000 |
| - Imported inputs: | 190 000 | | |

National agency in charge: Nicaraguan Social Security and Welfare Institute

Tentative duration: 18 months

Estimated starting date: February 1989

Special observations: The Government will be able to finance only 50% of the project's manpower costs. This model project could be expanded upon by UNICEF.

III. DISASTER PREVENTION AND FORECASTING SECTOR

SUMMARY: DISASTER PREVENTION AND FORECASTING SECTOR

(Thousands of dollars)

| Number | Title | Investment | External financing |
|--------------|--|--------------|-----------------------|
| III.1 | Revision of hydrological guidelines for bridge and sewerage projects and other construction works | 120 | 100 |
| III.2 | Study concerning the restoration of the ecological balance in the Arroyito basin: Fourth Region | 120 | 100 |
| III.3 | Strategic stockpiles of prefabricated bridges | 1 500 | 1 500 |
| <u>Total</u> | | <u>1 740</u> | <u>1 700</u> |

PROJECT OUTLINE

Sector: Disaster prevention and forecasting

Subsector: Technical co-operation

Project title: Revision of hydrological guidelines for bridge and sewerage projects and other construction works

Project objectives: To adopt new guidelines concerning the scaling and siting of structural works, roadways and railways.

Description of activities to be carried out: A review of updated hydrological series, including data on the recent disaster, with a view to redefining the hydrological guidelines for the design of construction works.

Expected project output: New hydrological guidelines for the design of construction works.

Total investment required: US\$ 120 000

Breakdown (US\$)

- Manpower: 10 000

- National inputs: 10 000

- Imported inputs: 100 000

Financing (US\$) 120 000

Local: 20 000

External: 100 000

National agency in charge: INETER

Tentative duration: 6 months

Estimated starting date: March 1989

Special observations:

PROJECT OUTLINE

Sector: Disaster prevention and forecasting

Subsector: Technical co-operation

Project title: Study concerning the restoration of the ecological balance in the Arroyito basin;
Fourth Region

Project objectives: To propose a programme for the correction of waterway channels and soil conservation in the Arroyito river basin.

Description of activities to be carried out: An analysis of options and the formulation of recommendations concerning the most effective and economical means of preventing adverse ecological impacts in the Arroyito basin.

Expected project output: A technical proposal concerning the best option for re-establishing the ecological balance.

Total investment required: US\$ 120 000

Breakdown (US\$)

- Manpower: 10 000

- National inputs: 10 000

- Imported inputs: 100 000

Financing (US\$) 120 000

Local: 20 000

External: 100 000

National agency in charge: DIRENA

Tentative duration: 6 months

Estimated starting date: March 1989

Special observations:

PROJECT OUTLINE

Sector: Disaster prevention and forecasting

Subsector: Emergency

Project title: Strategic stockpiles of prefabricated bridges

Project objectives: To set up a reserve stock of prefabricated bridge sections to meet temporary needs during the rainy season.

Description of activities to be carried out: Purchase of 500 metres of prefabricated single-lane bridges, in addition to tools and equipment for their assembly.

Expected project output: The availability of means of re-opening roadways whose bridges suffer deterioration or damage as a result of future floods.

Total investment required: US\$ 1 500 000

Breakdown (US\$)Financing (US\$) 1 500 000

| | | |
|--------------------|-----------|-----------|
| - Manpower: | Local: | |
| - National inputs: | External: | 1 500 000 |
| - Imported inputs: | | 1 500 000 |

National agency in charge: Ministry of Construction and Transport (MCT)

Tentative duration:

Estimated starting date: Before May 1989

Special observations: